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THE GENERAL PRACTITIONER AND UNDERGRADUATE MEDICAL TEACHING

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SUCH AN ASSIGNMENT as you have given to me! To discuss this pertinent subject would have been much more of an enjoyment had it not been so difficult. Because, it is a difficult subject. It is a difficult subject because medical education in itself is a difficult subject. But difficult things are usually most stimulating.

One would think that the problems of medical education would by this time, after centuries of experience, have been solved. But they are not—chiefly perhaps because of the social changes which are always taking place. Even the responsibilities of Medical Faculties change and the universities are faced constantly with such problems. Not so many years ago members of a Faculty of Medicine were responsible only for undergraduate teaching which could be done in most instances by part-time staff. Now and to an ever-increasing degree are the members of staff responsible not only for undergraduate teaching but also postgraduate work, research programs (both within and outside the University), public health activities, medical care programs, and committees — committees and committees — at local, provincial, national and international levels. These things are important; someone must do them and the demands upon the Faculties of Medicine grow and grow, and the cost to the university, in order to provide the services of such people to all of the worthwhile activities, and at the same time to meet all of its primary responsibilities to its undergraduate and graduate students, increases and increases. But giving leadership in so many fields of medicine is accepted as an inherent obligation by the medical faculties.

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DEFECTS IN PRESENT SYSTEM

There are obviously several major defects in the present system of medical education; (a) the length of time required for graduation—but could a good job be done in less time? (b) The high cost, first, to the student, and secondly, to the university. Fees in medicine are by far the highest of any undergraduate fees in a university, yet they account for the lowest percentage of total cost of education per student in any Faculty. (c) The admission requirements for entrance into medicine—what a problem! How can one compromise between academic standing and personality, enthusiasm and motivation, and at the same time realize that experience shows a student with low standing just cannot make the grade through medicine.

(d) Another major defect in the system of medical education is the division of responsibilities between pre-medical, medical and hospital phases of the total medical education program.

(e) The inflexibility of the medical curriculum, which is particularly apparent in the first and second years of the medical course proper.

It is so easy to criticize present medical education, yet it is so difficult to remedy these defects and I can assure you that the loudest and most sincere criticisms come from the members of the teaching staffs themselves.

OBJECTIVES IN EDUCATION

Having mentioned these defects and the responsibilities, perhaps it will be possible to outline the objectives which should underly the education of physicians. Undoubtedly the first objective must be the selection of the individual applicants with ability and the personal characteristics required for a career in medicine. Having selected the medical student, an educational program should be provided which will give the student a cultural background, and a more than passing acquaintance with the basic sciences

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which through the so-called medical sciences can be integrated into the clinical sciences and arts. Thirdly, there must be that objective of clinical study and the extra period of training to fit the graduates into the general practice of medicine. The next objective is that period of education and prolonged training for selected and highly competent graduates who desire to enter specialized fields of medicine. And underlying all of these objectives, the education of the physician must be a fusion of contemporary scientific knowledge and humanism.

Therefore, the subject "The General Practitioner and Undergraduate Medical Teaching" cannot be considered alone; there are many implications which are not immediately apparent. Discussion of this subject involves a consideration of the structure of undergraduate teaching, of the organization and availability of teaching beds, of the general status of specialization, and, finally, the organization, not only of the general practitioners themselves, but also the hospitals in which they practise. For this reason these areas must be considered briefly before proceeding with the subject as indicated.

Medical education, as now constituted, did not entirely originate as the result of a carefully laid long-term plan. Like all other developments of a social nature, such planning was modified by a variety of social forces originating in the groups most intimately concerned with the problem. Therefore, any suggested change, such as the integration of general practitioners into undergraduate medical training, can only be considered rationally and intelligently if some consideration is given to these related areas. These present many difficulties which must be considered. I discuss these, not with the intention of implying that the general practitioner cannot be integrated into undergraduate education, but of defining the problems which must be met if such a development is to take place.

TRENDS AND PRESENT STATUS OF SPECIALIZATION IN CANADA

Although the trend toward specialization in medicine is not new, it is only in recent years that this has been the subject of serious discussion. There are many factors which are fostering this development, and which must be considered. The following are the more outstanding ones:

A. *Present status of specialization.*[1]—The most recent figures available on the proportion of general practitioners and specialists in the Dominion of Canada were collected in September, 1949. At that time, some 49% of all practitioners were, by their own designation, engaged in general practice. The remainder included not only the specialties, but also those engaged in teaching, administration and public health, to mention a few. This proportion, of course, varies considerably from area to area. British Columbia reported the lowest proportion of general practitioners with 45% and Saskatchewan the highest with 60%.

As was to be expected, the proportion of general practitioners was much lower in the cities than in the rural areas. For example, in Toronto only 32% of the physicians considered themselves general practitioners. Other cities were Vancouver, with 35%; and Hamilton with 44%. My home city of London reports only 22%.

B. *Trends in general practitioner-specialist proportions.*—In Canada we do not have the figures over a sufficiently long period of time to draw any conclusions on the long-term trend toward specialization. However, our medical structure is so closely linked with that of the United States that trends observed there are applicable to Canada. In 1928, 74% (or roughly ¾) of all physicians in the United States considered themselves to be general practitioners. By 1942 this proportion had fallen to 49% (or approximately ½) of all physicians.[3] This represents a decline of 1/3 of the proportion of physicians engaged in general practice—a change of tremendous magnitude in the relatively short period of 14 years. It is interesting to note that the figure of 49% of physicians in general practice recorded in the United States in 1942 is the same as that recorded in Canada some 6 years later.[1] We would appear to be following a trend similar to that of the United States, with a lag of approximately 6 years.

C. *Factors influencing the trend.*—When one attempts to analyze the factors which may be responsible for the rise in specialization and the relative decline in general practitioners, one finds many variables which seem to play a rôle in this transition. You have suggested that I talk on the rôle of the general practitioner in undergraduate education, and I, therefore, assume that you believe the exposure of undergraduate students to teachers who are primarily specialists is an important factor in this change. Undoubtedly this may be one factor, but I would point

out that there are many other variables which undoubtedly play a part in this transition. One of the most important, of course, is the marked increase in complexity of the science of medicine. The period marked by the rapid rise in specialization is also associated with an acceleration in the addition of important medical knowledge. It has become almost impossible to keep abreast of the developments in all the branches of medicine. This, in itself, must be a powerful factor in the trend to specialization. Another factor of importance is the economic one. The last available survey of the income of physicians in Canada in the year 1946[4] showed the income of part-specialists to be 40% higher as a group than the general practitioner group, and full specialists to be over twice as high. Surely this is a factor which must be taken into consideration by the medical student when he plans his future. In addition, there is the prestige the specialist has developed, not only in the eyes of the general public, but in the eyes of the profession. By the very nature of his training and interest, he is able to be more informed in a limited field than is possible when a wider field must be covered. These are just a few of the factors which must be considered in attempting to analyze the basic reasons for this trend. There are others, but time does not permit their discussion.

Of the factors I have mentioned, which is the most important? I do not know. In a social development of this nature, one is never dealing with single, but always with multiple, factors. To select one without consideration of the others is to underestimate the complexity of changes of this nature.

D. *Is there a problem of over specialization?*—A degree of specialization is essential if medical progress is to be maintained. It facilitates more accurate diagnosis, greater development of techniques, and, in general, more accurate practice applied to the specific areas of the body. On the other hand, many objections and difficulties have been attributed to specialist practice. Some of the criticisms raised are a great tendency for the physicians to think only of the individual organs and to forget the patient as a person. The general knowledge and sympathetic understanding of the general practitioner is said to be lost. While this may not be too significant in purely organic disease, it is extremely important in that large group of patients whose symptoms are emotional in origin.

To provide adequate medical care to any area it would appear that there should be both specialists and general practitioners. But in what proportion? I do not know. It would appear that in a system based on free enterprise the public makes the final decision. Their demand for such a service and their willingness to pay for this type of service would appear to be the most significant factor. In medicine, as in all other fields, demand will determine the type of service provided. If it is felt that any specific development is not for the benefit of the health of the people, then effort must be directed not so much at changing the product offered as to modifying the demand. Efforts to plan this from a central office on basis of facts which appear reasonable have not been an outstanding success in the British system. There is little to suggest that we can plan more adequately.

PROBLEMS IN THE INTEGRATION OF GENERAL PRACTICE IN UNDERGRADUATE MEDICAL TEACHING

Despite what has been said to the contrary, many medical schools provide opportunities where general practitioners can and do play a part in undergraduate teaching. However, the rôle of the general practitioner in a faculty of medicine presents a number of problems which must be appreciated, and for which some solution must be reached if he is to play a significant part. The following are the more serious problems:

A. *The maintenance of the general practice status.*—The general practitioner in a teaching atmosphere is brought into intimate contact with all staff members. Being human and capable of being influenced he is impressed by this experience. He rarely remains a general practitioner in the broad sense of the term. Soon he develops special interests and limits his practice in certain fields. He may still be a general practitioner officially, but in his practice and thinking he has changed.

B. *The problems of finance.*—There are many misconceptions about the financial status of faculties of medicine in lay and many medical minds. They hear of Provincial grants and of large research grants, failing to realize that the ordinary day-to-day running of the school is carried out on rather meagre funds. The payment to teachers, particularly those engaged in part-time instruction, is relatively limited. The

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time spent in teaching would be much more remunerative if it was used in the practice of medicine. Part-time teachers must have sufficient interest, and obtain satisfaction from the aspects of university life to accept this situation. This would be possible only if there were a widespread interest.

C. *General interest of general practitioners in undergraduate education.*—In 1948 while I was chairman of the Committee on Medical Education of the Canadian Medical Association, the subject of preparing teaching subjects to fit the student for general practice was under discussion. I became quite interested in this subject and made enquiries to determine if any practitioners could provide detailed information on the manner in which present medical teaching failed to prepare a student adequately for general practice, and to clearly outline exactly what constitutes general practice. I was unable to obtain any accurate picture in this field. Therefore, along with our Professor G. E. Hobbs, present Chairman of the Committee on Medical Education, I spent many hours drawing up a questionnaire which was designed to provide a picture of the nature and types of cases seen in general practice, with the purpose of providing this information to medical educators.[5] The length and detail of this questionnaire was determined by the nature of the subject concerned. Through the co-operation of the administrative offices of the Canadian Medical Association this questionnaire was widely publicized. It was the subject of an editorial in the Journal of the Canadian Medical Association and was also announced at numerous district meetings, so that there was little reason for any active member of the Canadian Medical Association not being aware of the importance and intent of the questionnaire.

Yet, despite all this effort, when the total response was summed up, it was extremely disappointing. Only 88 physicians in the whole Dominion saw their way clear to fill in this questionnaire. This was out of a total physician population of approximately 13,000 at that time, or only 1 physician in 250. I do not have the original figures readily available, but if my memory serves me correctly, those replying to the questionnaire were, for the most part, specialists. The difference in response between the general practitioners and specialist group was marked.

There are only two possible explanations to this situation, either the general practitioners were completely satisfied with the status of undergraduate medical education, or they were not sufficiently interested to complete a questionnaire, which would have been considerably less time consuming than giving one undergraduate clinic. I think the more likely explanation is the second one. General practitioner apathy would appear to have been the big problem in carrying out this suggestion. Of course, this was some three years ago. Since that time there is evidence that the general practitioners are organizing, and showing concern over their situation, and undoubtedly a different picture would present itself today.

D. *Measurement of quality among general practitioners.* — When a specialist receives a teaching appointment at a faculty of medicine the minimum requirement is a Certificate or Fellowship of the Royal College of Physicians and Surgeons, depending on the specialty. This ensures a degree of graduate training where the period spent and the area of study is clearly defined. In other words, a standard is established which is useful in providing an "academic floor". In the field of general practice no such standard is readily available. There is little to distinguish the general practitioner who has proceeded into practice directly on graduation, has rarely looked at a medical journal, and never attended a medical meeting, from the one who has taken prolonged training, has regularly consulted the literature and has attended whatever clinical meetings were available. This presents an extremely difficult problem, and is one which must be met by the general practitioners themselves if any progress in this field is to be made.

E. *Graduate training in general practice.*—As has been mentioned some system must be set up to identify those general practitioners who have had a more adequate graduate training than the average. To do this, facilities must be established where the general practitioner can take the type of graduate training which would fit him for this rôle in the practice of medicine. At the present time facilities for graduate training are very limited. In most centres all available facilities are being utilized to capacity for undergraduate and specialist training. There is a definite limit to the number of undergraduate and graduate students who can be trained on a given number of teaching beds. Without increasing facilities,

any expansion of graduate training in general practice will be at the expense of the quality of the existing undergraduate and specialist training programs. One does not wish to imply that specialist training should have priority, but this has been established for a number of years in the university centres, whereas the demand for general practice training is new and still, to some degree, nebulous. In my opinion, therefore, added facilities must be organized which can be used for graduate training of general practitioners, other than the facilities immediately integrated into presently established university schemes. I do not mean to imply that this development should be entirely divorced from the university, but suggest that there are many hospitals which lend themselves to this type of training, provided they organize on a basis which will make training possible. The faculties of medicine could give guidance, but they would not be left with the complete responsibility for this development.

The problem of teaching beds seems to me to be the centre of the problem, and I do not feel that any number of resolutions for further graduate training of general practitioners will be productive unless this vital problem is met. As things are now developing the situation is not improving. With the growth of hospitalization insurance, the number of patients available for graduate and undergraduate teaching is being limited. Moreover, your own society has passed a resolution recommending that those who do not have the funds to pay for health insurance coverage by their own means should have government support. No mention was made of the influence of this recommendation on present teaching facilities. This question has been posed with a number of members of the Canadian Medical Association who are active in these recommendations and they have no specific recommendations, but simply do not feel this should be a factor in the decision. With this feeling I cannot agree. By a stroke of the legislative pen medical education could be, for all practical purposes, eliminated. Medical teaching cannot be carried out in the absence of adequate numbers of out-door and in-door hospital patients, where the diagnosis, treatment, and care of the patient is a complete responsibility of the teaching staff. To share this responsibility is simply to undermine the principles of teaching. To have too few patients for teaching purposes simply spells the doom for medical education as we know it today.

It isn't difficult to see that the quality of medical education, yes, even the future of medical education itself, is in jeopardy if large numbers of patients in the teaching hospitals of this country are to be denied the teachers of medical students. Without the medical students of today there will be no physicians and surgeons of the future.

SUMMARY AND CONCLUSIONS

In this paper I have had no intention of appearing to be a defeatist in my attitude to the integration of general practice in undergraduate education. Rather, it was my intention to stimulate your thinking to the stage where some of the problems encountered in this development will be clearly defined and considered along with the more general consideration.

In my thinking the following must take place before this suggestion can become a reality:

A. *Education and stimulation of interest among general practitioners.*—Obviously this is taking place both in Canada and the United States. A group such as yours would be relatively unheard of some 10 years ago. General practitioner sections must obtain speakers who are capable of outlining some of the information which must be considered before this development can proceed and not simply discuss pleasant sounding platitudes.

B. *Establish methods of certification.*—Some means of establishment of identity of the well trained general practitioner must be worked out. The requirements of their graduate training must be clearly defined and must be sufficiently extensive to promote a feeling of accomplishment in those who have met these requirements. This too, would appear to be in the early stages of development. However, there is one other problem I think must be met and in this the general practitioners could become leaders rather than followers. A great deal of time and effort has been spent on establishing clear-cut periods of training for certification in the specialties, but no group has ever faced the problem of what happens to the man after the completion of his training. This is something in which the general practitioner group could provide leadership. They could establish criteria which would no longer allow a man to obtain a degree or a rating and then spend the rest of

his life completely untouched by the progress of medicine.

C. *Facilities for the training of general practitioners must be established.*—As I have mentioned, present facilities are overtaxed, yet there are ample patients in hospital who could be used if the staffs were organized and if the teaching methods of the university centres were set up. This requires, however, a drastic change in thinking in your own group. General practitioners must be fully convinced that although they may appear to make certain sacrifices in this regard, the overall picture will be decidedly to their advantage. A group such as yours would appear to provide a very necessary nucleus from which this movement can grow. The movement is a very healthy one.

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COMBINED ANTIBIOTIC THERAPY*

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THE ADVENT of penicillin, streptomycin, and the broadspectrum antibiotics has served to increase the range of antibacterial control. However, the two Gram-negative bacilli *Pseudomonas æruginosa* (*B. pyocyaneus*) and *Proteus vulgaris* are still highly resistant to known therapeutic agents and very difficult to treat clinically. Synergistic or additive effect of drug and antibiotic mixtures has been reported by a number of authors,[1 to 4] and infections with these organisms which are resistant to individual antibiotics might profitably be treated with various combinations. The case reported below of *Ps. æruginosa* pyelonephritis and septicæmia was treated in turn with sulfadiazine, streptomycin and polymyxin B (aerosporin), and finally brought under control by a combination of aureomycin and streptomycin.

CASE REPORT

A 69 year old longshoreman was admitted to the Boston City Hospital because of chills, fever and pain on urination, of several days' duration. Many years previously, the patient had gonorrhœa and developed a urethral stricture. During the preceding six years, he made regular visits to the genito-urinary out-patient department for dilatation and irrigation. Two weeks prior to admission, the patient developed a painful epididymitis of the left scrotum and a urethral discharge. He was given penicillin and gantrisin for a period of a week with only slight improvement in his symptoms. The onset of shaking chills, fever, low back pain and burning and difficulty of urination necessitated his admission to the hospital.

Physical examination revealed an acutely ill white male. The temperature was 104° F., the pulse 120 and the blood pressure 120/70. The skin was dry and hot, the conjunctivæ were injected and the face was flushed. The heart was not enlarged, and the rhythm was regular. The lungs were clear. There was tenderness in the suprapubic region and the bladder was percussed 5 cm. above the symphysis pubis. Bilateral costo-phrenic angle tenderness could be easily elicited and the left side of the scrotum was enlarged, warm and somewhat tender. Rectal examination revealed a slightly enlarged prostate gland which was tender to palpation.

Laboratory findings included the following: urine acid pH 5.5, specific gravity 1.009, slight trace of albumin, and loaded with white blood cells. Non-protein nitrogen 25 mgm. %, CSR 22 mm. per hour and white blood cell count 9,000 with 73% polymorphonuclear cells. The CO_2 combining power was 51 volumes % and the blood chlorides 96 milli equivalents per litre. A urine smear revealed Gram-negative rods and both urine and blood cultures were positive for *Ps. æruginosa*. Initially the patient was started on 1 gm. of sulfadiazine every 6 hours. This was continued for 3 days; however when it became evident that he showed no improvement, and the culture reports were known, streptomycin was given in doses of 1 gm. twice daily and continued for 3 days. During this period the patient remained acutely ill. The temperature was of the septic type ranging daily from 98 to 103° F. Repeated urine and blood cultures during this period were all positive for *Ps. æruginosa*. At about this time the patient developed tenderness in the region of the liver, and this organ began to enlarge progressively, both to palpation and on visualization by flat plate of the abdomen. Liver function tests revealed an icterus index of 35, cephalin flocculation 4 plus, Van den Bergh 2.55 mgm. % total, and 1.23 mgm. % direct, thymol turbidity 13.1 units and zinc flocculation 2 plus.

It was believed that the patient had developed either a toxic hepatitis, liver abscesses, or a pylephlebitis. The situation was now desperate, and it was decided to use aerosporin (polymyxin B), despite previous reluctance to use this antibiotic because of its renal toxic action. On the seventh hospital day polymyxin B was started in doses of 40 mgm. every 6 hours. A urine culture on the following day as well as 48 hours later still showed the presence of *Ps. æruginosa*. The temperature remained elevated, and the urinary sediment remained loaded with white blood cells. Because of the appearance of red blood cells in the urine, the dose of polymyxin B was reduced from 40 to 20 mgm. every 6 hours and continued until the eleventh hospital day. Finally at this time the patient was started on a combination of antibiotics: streptomycin ½ gram every 6 hours and aureomycin ½ gm. every 6 hours. Within 24 hours the temperature fell to normal and remained normal (see Fig. 1). Subjectively the patient felt greatly improved, and the urinary sediment which had repeatedly been loaded with white

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blood cells cleared over a period of 4 days until it contained only a few of these cells. By the fourteenth hospital day, *Ps. æruginosa* could no longer be cultured from the urine, although some enterococci still grew out. At this time agglutination studies between the patient's serum and the *Ps. æruginosa* originally isolated from his blood revealed a positive titre up to 1:640. The liver tenderness began to recede and its size diminished progressively. The icterus index returned to normal and the cephalin flocculation became 1 plus instead of 4 plus. Because of the development of moderate diarrhœa, the combined antibiotics were stopped after 3½ days and a total of 7 gm. of aureomycin and streptomycin each. The patient continued to maintain his clinical improvement and shortly became ambulatory, finally being discharged well 27 days following his admission.

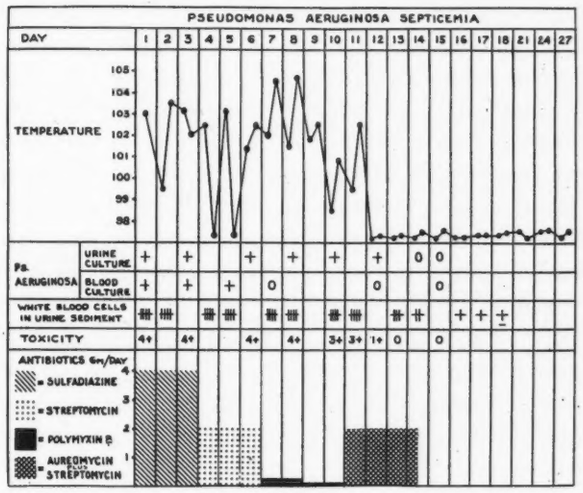

Fig. 1

DISCUSSION

As a result of *in vitro* sensitivity studies of a number of strains of *Ps. æruginosa*, Frank *et al.*[5] concluded that aerosporin (polymyxin B), ranked first and polymyxin D next in effectiveness against this organism. Streptomycin was active in high concentrations against a majority of strains, while aureomycin and chloromycetin were inhibitory in concentrations outside the clinical range. The findings of Long *et al.*[6] and Bliss and Todd,[7] are confirmatory in this regard.

In vivo studies and clinical application however have shown that no single antibiotic is entirely satisfactory in controlling these infections in humans,[8, 9] and one is reluctant to use the most effective agents, *viz.*, the polymyxins, because of their toxic action. Such infections therefore provide a fertile field in which to try combinations of antibiotics, attempting by means of proper synergism to accomplish what similar doses of the single antibiotic cannot do.

Although apparent drug antagonism was found by Jawetz *et al.*[10] with the chloramphenicol-penicillin combination when used with enterococci and by Armstrong and Larner[11] in the case of *Ps. æruginosa*, other antibiotic combinations have been shown to be as much as twelve times more effective in combination as singly, in both *in vitro* and *in vivo* studies.[11] It should be pointed out further that in order to demonstrate a significant synergistic effect, it is necessary to employ proper concentrations of the drugs. Thus when 20 units of penicillin and 2 mcgm. of streptomycin were given simultaneously to mice injected with *Salmonella typhosa* an antagonistic effect was obtained, while 200 units of penicillin and 2 mcgm. of streptomycin produced a markedly synergistic effect.[12] This highlights the need for sensitivity studies in any given case in which a combination of antibiotics is used.

In mice infected experimentally with seven strains of *Ps. æruginosa* it was possible to demonstrate greatly enhanced effectiveness of certain antibiotic combinations using aureomycin, chloramphenicol, penicillin, dihydrostreptomycin and terramycin.[11] Dihydrostreptomycin appeared in all the optimum combinations. Our own patient demonstrates the clinical application of such usage of combinations of antibiotics and of their great value in a given instance of *Ps. æruginosa* septicæmia.

SUMMARY AND CONCLUSIONS

1. Infections with *Ps. æruginosa* are among the most difficult to control clinically.

2. A case of *Ps. æruginosa* septicæmia and pyelonephritis which failed to respond to sulfadiazine, streptomycin and aerosporin (polymyxin B), when given individually, showed dramatic improvement following the use of an aureomycin-streptomycin combination.

3. Infections due to *Ps. æruginosa* and *P. vulgaris* are among the most suitable in which to use antibiotic combinations.

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HEPATITIS IN INFECTIOUS MONONUCLEOSIS*

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DURING RECENT YEARS it has been recognized that infectious mononucleosis is a widespread systemic disease, involving practically every tissue in the body. The former medical attitude that the disease was more a nuisance than a menace has changed since the first autopsied case was described in 1939 by Thomsen and Vimtrup.[1] Although the mortality is exceedingly low, it does cause considerable morbidity. The lymphatic and hæmatopoietic systems are the sites of major involvement, but the heart, lungs, kidneys, digestive tract, brain, adrenal and pituitary glands, all may show evidence of disease. In his original description of glandular fever in 1889, Pfeiffer[2] mentioned liver enlargement as one of the physical findings. Snapper[3] in 1922 first described jaundice as a complication, and for many years the jaundice was ascribed to partial obstruction of the biliary system by enlarged lymph nodes in the porta hepatis. Aspiration biopsy first done by Kilham and Steigman[4] in 1942 showed the presence of definite hepatocellular damage. With the advent of liver function studies[5 to 9] it was found that hepatitis was present in patients without clinical jaundice. Peterson[10] showed that about one-third of the patients in his series had hepatitis, and that the degree of liver involvement may be so severe as to make the differential diagnosis between infectious mononucleosis and infectious hepatitis extremely difficult. Only the heterophil antibody in some cases permits the separation of the two similar entities.

Several years ago my interest in infectious mononucleosis was aroused by the unexpected frequency of the disease and the prolonged weakness and fatigue which may follow an attack. In January of 1950, through the co-operation of Dr. Eden of the Department of Biochemistry at the Vancouver General Hospital, liver function studies were done on all patients with infectious mononucleosis suspected of having hepatitis. During the past 18 months I have seen in my own practice a total of 34 patients with infectious mononucleosis, and, of these, 14 had both clinical and biochemical evidence of impaired liver function.

In this series of 14 patients there was an equal distribution between the sexes. Their ages ranged from 12 to 43 years. All had a rapid onset with symptoms of an acute generalized infection with malaise, headache, chilly sensations, weakness, and fatigue. The temperature was remittent, varying from 100 to 104°. The pulse rate was slower than one would expect in relation to the temperature. Sore throat was present in all patients, but varied in severity from a mild discomfort to a severe aching pain. A characteristic of the pain was that it was not affected by local therapy, but responded well to analgesics by mouth. All patients with hepatitis complained of anorexia, nausea, and vomiting of moderate severity, and two suffered from diarrhœa.

The most consistent physical finding was enlarged lymph nodes, but there was considerable variation in the time of appearance, size, distribution, and duration of the enlargement. The glands were usually firm and discrete. In about half the patients the enlargement of the lymph nodes was minimal and present only in the cervical region. The findings in the pharynx varied from a mild hyperæmia to a pseudo membranous inflammation resembling diphtheria. Two had clinical evidence of pneumonitis. The liver edge was palpable and tender in all fourteen patients, and the spleen was palpable in three. Only six showed evidence of mild jaundice. Two developed a fine, macular skin rash during the course of their illness.

The most characteristic laboratory finding was, of course, the increase of atypical lymphocytes in the blood which was present in all cases. Initially there was a transient increase in granulocytes followed by a marked decrease in the polymorphonuclear elements and an increase in the atypical lymphocytes. At the height of the disease, the average total count was 8,500 with a range from 5 to 16,000. The polymorphonuclear cells varied from 3 to 19% and the lymphocytes from 62 to 87%. The Paul Bunnell test was positive in high titre in all patients and remained so for a period of from two to five months. Serial liver function tests were done on all suspected cases and the 14 cases included in this report showed definite evidence of impaired liver function on at least three separate occasions. Table I shows the liver functions at the height of the disease. The total bilirubin was elevated in six of the 14

*Read at the Annual Meeting of the Royal College of Physicians and Surgeons of Canada, Quebec, September, 1951.

cases. The alkaline phosphatase was elevated in nine. In five patients it was over 30 K.A. units. The thymol turbidity was increased in eleven. The thymol flocculation test was positive in all but one and proved the most helpful in following the progress of a case. It most closely paralleled the clinical course of the disease. The acute symptoms subsided in from one to three weeks, but the weakness and fatigue, which was marked in all patients with hepatitis, lasted from one to six months.

CASE REPORT

The following case is typical of infectious mononucleosis with hepatitis. A twenty-one year old female was first seen on December 24, 1949, one week after the sudden onset of chills, general malaise, headache and increased temperature. She complained of anorexia and nausea but had not vomited. Physical examination revealed the pharynx to be mildly injected and a small palpable gland in the left posterior triangle of the neck. The temperature was 101°. The laboratory findings are illustrated in Table II. Initially there was a shift of the granulocytes to the left, but the blood picture gradually changed to that characteristic of infectious mononucleosis. The temperature remained remittent for the next four weeks varying from 99 to 104°. Three weeks after the onset of her illness she complained of increased nausea and was troubled with vomiting. An icteric tinge of her sclera appeared and the liver edge was palpable and tender. These symptoms lasted for the next five days, but the liver remained enlarged for the next week. Liver function studies are given in Table II. At the end of four weeks her temperature returned to normal but the weakness and fatigue remained for the next two months. Her recovery was complete at the end of three months and she has had no recurrence and liver function tests are normal.

There are two important features in this case which perhaps explain why infectious mononucleosis is not diagnosed more frequently. Initially her blood smear showed a shift to the left with a marked increase in the immature polymorphonuclear cells. The typical blood picture of infectious mononucleosis did not appear until the end of the second week. Secondly, the heterophil agglutination test did not become positive until the end of the third week. If patients are seen in this early stage and further studies of the blood are not made, the diagnosis will be missed.

All patients were treated with bed rest and a high carbohydrate and protein diet. Three cases were seen for the first time after the acute phase of their disease was over. They had returned to work but complained of marked weakness and fatigue which persisted for a longer time than in those who were seen earlier. The last six patients were treated with aureomycin and I feel the duration of their acute symptoms and period of weakness was shortened. Every patient has made a complete recovery with no residual symptoms and liver function tests have returned to normal.

It appears from these observations that hepatitis due to infectious mononucleosis occurs frequently. It is sufficient in degree to alter the routine liver function tests and it materially

TABLE I.

LIVER FUNCTION

Case No.	*1 (F.)*	*2 (F.)*	*3 (M.)*	*4 (M.)*	*5 (M.)*	*6 (F.)*	*7 (M.)*	*8 (F.)*	*9 (M.)*	*10 (F.)*	*11 (M.)*	*12 (M.)*	*13 (F.)*	*14 (F.)*
Total bilirubin	1.6	0.5	0.7	1.6	1.6	0.5	0.5	2.5	0.5	2.1	0.4	1.6	0.65	0.45
Alkaline phosphatase	41.0	16.0	15.4	10.0	13.0	31.0	23.0	40 0	9.0	51.0	13.0	58.0	8.0	16.0
Thymol turbidity	7.0	3.0	5.0	6.0	7.0	15.0	6.0	6.0	4.0	3.0	4.0	6.0	6.0	7.0
Thymol flocculation	3+	2+	4+	3+	2+	4+	3+	4+	3+	0.0	3+	2+	3+	3+
Protein	7.2	6.9	6.3	6.9	6.5	6.6	7.5	7.4	6.6	7.2	6.5	7.2	6.9	7.7
Paul Bunnell	5.1/2.1 1/5,120	5/1.7 1/1,280	1/5,120	1/2,560	48/1.5 1/640	45/2.1 1/2,560	1/1,280	1/640	4.6/2.0 1/1.280	5.4/1.8 1/640	4.5/2.0 1/2,560	4.8/2.4 1/640	4.8/2.3 1/2,560	5.1/2.6 1/160

TABLE II.

	BLOOD									LIVER FUNCTION				
Date	*Paul Bunnell*	*Hgb. and R.B.C.*	*Total W.B.C.*	*Poly.*	*Staff*	*Lymph.*	*Mono.*	*Eos.*	*Bas.*	*Sed. Rate*	*Total Bili.*	*Alk. Phos.*	*Thymol Turb.*	*Thymol Flocc.*	*Protein*
Dec. 31, 1949	neg.	89%	5,250	15	50	24	9	1	1	6					
Jan. 2, 1950	neg.		6,650	12	37	47	3	1		5					
Jan. 5, 1950	neg.		5,300	7	33	50	6	3	1						
Jan. 7, 1950	neg.		8,500	9	19	63	6	1	2		1.6	41	5	2+	6.6 3.9/2.7
Jan. 10, 1950	1/1,280		10,150	13	21	56	6	1	1	23	1 5	39	7	3+	6.2 3.9/2.3
Jan. 16, 1950	1/5,120		7,100	8	16	69	2	4	1						
Jan. 23, 1950	1/5,120		6,000	37	18	37	6	2			1.0	16	7	3+	6.0+ 4.5/1.9
Feb. 3, 1950	1/640		9,100	51	3	44	1	1			0.7	11	5	3+	7.2 5.1/2.1
Feb. 18, 1950	1/80	85% 4.5 mil	6,100	30	1	61	1	7			0.5	8	4	1+	6.4
Mar. 29, 1950	neg		8,100	42	2	51	1	1			0.5	4	2	0	6.3 3.9/2.4

alters the course of the illness by prolonging the period of disability. Early diagnosis and treatment will decrease the prolonged debility which often results in unrecognized and untreated cases.

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MORE GLOMERULAR CHANGES IN DIABETICS*

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DURING A REVIEW of 290 necropsies on diabetics, a renal glomerular lesion was encountered which differed fundamentally from that described by Kimmelstiel and Wilson.[1] In a search of the literature, only one previous description of such a lesion[2] was found. Elsewhere, even if it appeared in photographs of diabetic glomeruli, *e.g.*, Fahr[3] (Fig. 3), Allen[4] (plate 239C), McManus[5] (Figs. 88, 89), it has not been differentiated from an associated intercapillary sclerosis. The changes we are referring to affect the glomerular tuft, the capsule, and possibly the basement membrane of the tubules.

CHARACTERISTICS OF THE LESION

Glomerular changes: the fibrin cap.—In sections stained with hæmatoxylin and eosin (Figs. 1 and 2), the convex outer borders of the capillary loops are capped by a crescentic, glossy, bright pink homogeneous deposit. If intercapillary sclerosis is also present, the latter lesion contrasts clearly because of its lighter, more matt pink colour and its position on the other side of the capillary loop.

To study the early stages of this change and the exact relationship of the deposit to the components of the glomerular tuft, one must use Mallory's phosphotungstic acid hæmatoxylin stain, for when it first appears, the material stains evenly dark blue like fibrin and this colour contrasts well with the yellow glassy membrane of the reflected layer of the capsule. The material first appears in the convexity of the capillary loop between the endothelial cell and the glassy membrane, Fig. 3, and then acquires a pointed crescentic shape by spreading down between the same two layers into the sulcus between the loops. At first there is no visible change in the glassy membrane and the material looks just like an exudate of fibrin separating the basement membrane from the endothelial cell. The evolution of the lesion shows few changes other than increase in size and slight modification in staining reaction. Some of the material may lose the staining qualities of fibrin as seen with the P.T.A.H. stain. Frequently the cap develops small vacuoles and becomes irregularly sudanophilic but it never becomes invaded by cells or becomes organized into fibrous tissue. Even when the whole glomerulus has become sclerotic, the crescentic cap is still obvious inside the pale shrunken tuft owing to its more intense pink colour. In the Masson stain the cap is red and is at first sharply defined from the rest of the structures of the glomerulus but if the glomerulus becomes fibrosed the line of demarcation of the cap from the surrounding tissue becomes blurred. With the periodic acid stain the material is dark pink and with Laidlaw's silver stain it is not argentophilic. These staining reactions are exactly those of the bright pink material found in diabetic arteriolosclerosis and the fibrin cap was never present without associated severe arteriolar disease.

Capsular changes: the capsular drop.—Somewhat similar lesions develop in relation to the basement membrane of the capsule. At first they are localized drop-like swellings which stain slightly paler with H. and E. than do the glomerular hyaline caps (Fig. 4). They stain red with Masson connective tissue stain, dark blue in part at any rate with P.T.A.H. (Fig. 5), and, like the glomerular lesion, are variably sudanophilic. With the P.A.S. stain it is difficult to be sure of the exact staining reaction of the lesion under

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Dr. G. W. Smith was at this time receiving a grant from the Insulin Trust Fund.

discussion because the kidneys in which they appear usually show complex capsular lesions of various ages and possibly of differing causes. Most commonly, the basement membrane is sharply defined and the material which stains a very pale pink lies between it and the capsular epithelium. Sometimes the swelling appears to be part of the basement membrane and stains as darkly as the latter does and sometimes the material is enclosed by frayed fibres of the basement membrane.

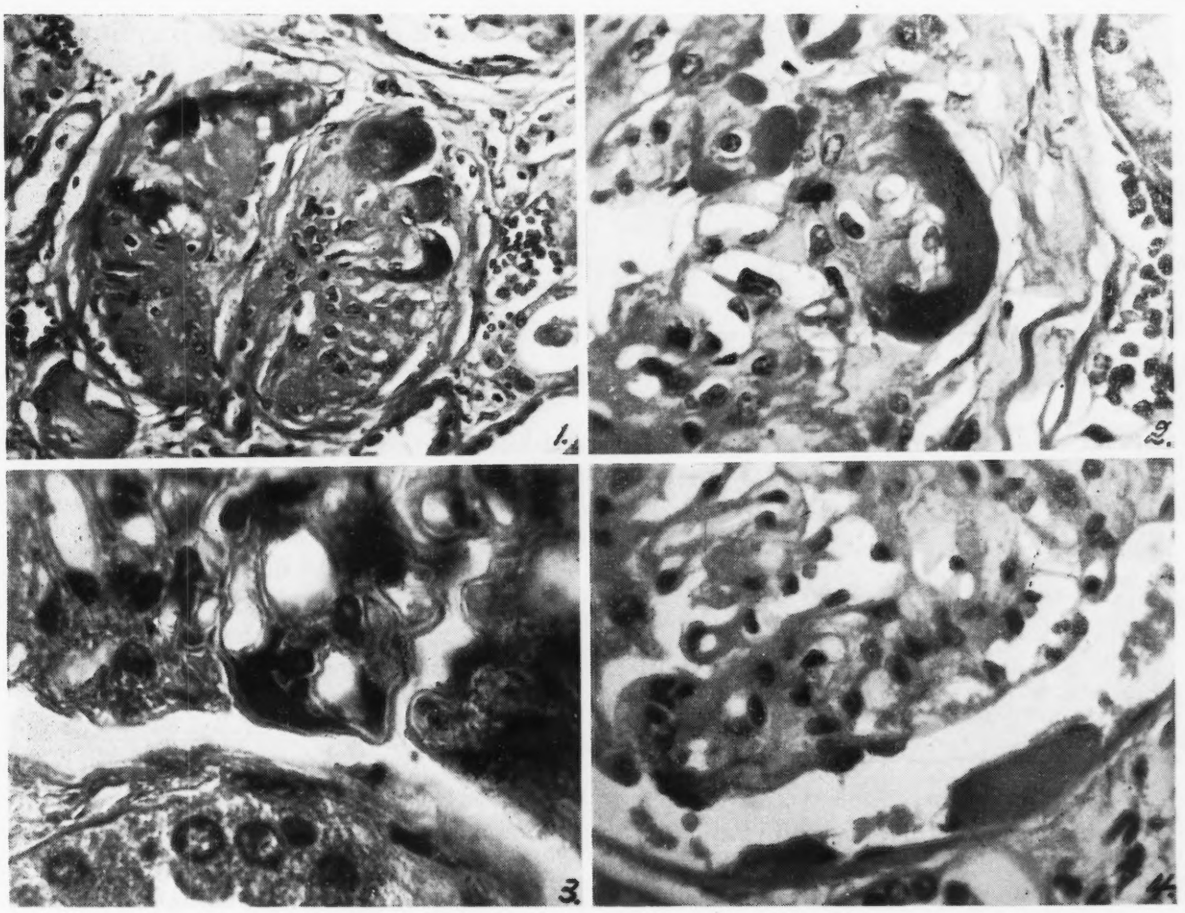

Fig. 1.—Crescents forming fibrin cap in diabetic glomerulus. H and E x 256. Fig. 2.—Fibrin cap showing its position outside endothelial cells of glomerular tuft. H and E x 538. Fig. 3.—Early formation of fibrin cap between basement membrane and endothelial cell of glomerular tuft. Phosphotungstic acid hæmatoxylin x 900. Fig. 4.—Capsular drop in diabetic glomerulus. H and E x 538.

Secondary changes occur rapidly and the frayed fibres seen may possibly be proliferative. The site of appearance of these swellings is nearly always on that part of the capsule opposed to the place of entry of the glomerular arteriole and sometimes can be seen to be closely related to the origin of the efferent tubules. Indeed pink material may extend down between the epithelium of the tubule and the basement membrane for a short distance. The evolution of the lesion differs from that in the glomeruli. As the material increases it becomes crescentic and cells appear in it which, in part, may be derived from the capsular epithelium but which, more usually, are derived from fibroblasts which as Ohmori[6] described, can be seen streaming in through breaks in the basement membrane (Fig. 6). This cell invasion is followed by a transformation of the pink material into fibrous tissue which stains green with the Masson stain. Adhesions often form between it and the glomerular tuft. This difference in behaviour of the material in

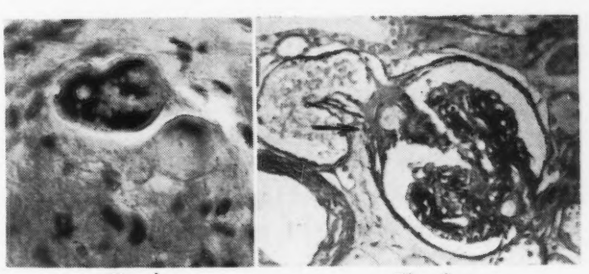

Fig. 5 Fig. 6

Fig. 5.—Capsular drop phosphotungstic acid hæmatoxylin x 538. Fig. 6.—Break in basement membrane of capsule near origin of tubule (arrow). H and E 192.

the two sites may lie in their different relationship to the basement membrane. In the glomerulus the exudate, if exudate it is, is separated from the connective tissue of the mesangium by the capillary. In the capsule, it is separated from the connective tissue surrounding the glomerulus only by the basement membrane which seems to be crossed easily by connective tissue.

Tubular changes.—We have already mentioned that the capsular exudate may extend down between the epithelium and the basement membrane of the first convoluted tubule. Minor degrees of exudate are seen in other places in the convoluted tubules and seem to be replaced by fibrous tissue at a later stage. This is associated with considerable thickening of the basement membrane which however occurs in many forms of tubular atrophy.

TABLE I.

INTERRELATIONSHIP OF GLOMERULAR LESIONS

	Capsular drops	*Fibrin caps*	*Intercapillary sclerosis*
Capsular drops....	3	2	10
Fibrin caps.....	2	4	5
Intercapillary sclerosis.....	10	5	16
All 3 lesions together.....	5	5	5
Totals...	20	16	36

(This table is arranged to show the incidence of each lesion alone (underlined numbers) and in combination with the others).

Incidence of lesions.—Table I shows the incidence of the glomerular and capsular lesions compared with the incidence of the classical Kimmelstiel-Wilson lesion in the same series of 290 diabetic kidneys. As can be seen, fibrin caps and capsular drops such as we have described can be found together or separately and either combined or not with the Kimmelstiel-Wilson lesion. Fibrin caps occur half as commonly as intercapillary sclerosis. The average age of patients showing fibrin caps was 62.4 years and the average age of those showing intercapillary glomerular sclerosis was 63.5 years. The blood pressure was markedly elevated in all cases except two and these two patients were desperately ill with heart failure and septicæmia respectively when the only blood pressure recordings were made.

Specificity.—The changes we have described are not individually specific for diabetes and it would be surprising if they were. Thus the fibrin cap was found in 11 out of 15 cases of glomerulonephritis and the four cases in which they were absent were early ones. Capsular drops were, however, absent in this series and so were fibrin-staining hyaline changes in the extra-glomerular part of the arterioles. None of the changes were seen in a careful study of 15 cases each of benign hypertension, malignant hypertension, atherosclerotic nephrosclerosis and pyelonephritis. The fibrin caps found in diabetes were larger than those in glomerulonephritis and the combination of fibrin caps, capsular drops and hyaline changes in the extra-glomerular part of the arterioles is probably at least as specific for diabetes as is the Kimmelstiel-Wilson lesion.

DISCUSSION

The first problem is the nature of the material in the glomerular tufts. Zollinger[2] suggested it to be fibrinoid degeneration of the basement membrane. In the early lesions, however, the basement membrane is intact and the material appears between it and the endothelium. The earliest deposition of amyloid occurs at the same site (Ohmori[6]) and only later the glassy membrane is obscured by the growing lesion. This suggests that the material, like amyloid, may be a deposit rather than a degeneration of existing tissue and since it behaves tinctorially like fibrin, probably is a fibrinous exudate.

The next problem is the mechanism of its deposition. In diabetic nephrosclerosis, especially in the Kimmelstiel-Wilson syndrome, albuminuria occurs, sometimes in large amounts, indicating an abnormal permeability of the glomeruli to protein. If the capillary and the basement membrane should develop a different permeability to a large molecule like fibrinogen or if abnormal molecules should be present in the plasma a pool might accumulate between the two layers. The presence of sudanophilic substance in the lesions could likewise be explained by the high lipoid content of diabetic blood. It is of interest that the material accumulates at the convexity of the loop, where the static pressures are maximal. This suggests that mechanical factors may play a part, probably the same which cause urine to filter only into the capsular space and not into the mesangium. Since the deposit only occurs at the convexity it does not come into direct contact with the fibroblasts of the mesangium and thus it fails to become organ-

ized. By the time the lesion has become extensive and fuses with the remainder of the glomerulus, the tuft usually has become hyalinized and no fibroblasts remain to organize the fibrin.

The third problem is the relation between the fibrin cap and intercapillary sclerosis. Histologically they are quite distinct as regards position and staining reaction, for the latter lesion always stains green with Masson's stain. It is difficult however to deny the possibility that the two conditions might have a similar pathogenesis, for any exudate occurring into the mesangium would become organized very rapidly. In favour of some close association is the remarkable correlation in age and sex incidence. Against it is the fact that intercapillary sclerosis seems to develop from radial fibrosis of the mesangium while the fibrin cap, as Zollinger pointed out, is closely associated with arteriolar lesions and resembles them in staining properties.

The changes in the capsule are less easy to discuss. As can be seen from Table I, capsular drops were more often associated with intercapillary sclerosis than with fibrin caps and they are described in Kimmelstiel and Wilsons' original paper. It is tempting to explain their development as being due to degenerative changes in the basement membrane, for to suggest that the accumulation of pink material is due to a hold-up in the passage of certain components of fluid is to assume that there is normally traffic of fluid across the capsule. However, the latter supposition is not intrinsically unlikely, for as Kaiserling[7] has shown, the glomerular capsule is partly enclosed by a crescentic lymphatic channel. If such a traffic of fluid exists, our explanation of the genesis of the fibrin cap would also fit that of the capsular drop. The presence, in the drop, of fat and protein other than fibrin, would merely reflect the composition of the fluid crossing the capsular space and the hold up of these components would be due to a decrease in permeability of the basement membrane. In the present state of our knowledge we do not regard the question as being anything else but an open one, but feel that it would not necessarily be clarified by falling back on the fashionable term of fibrinoid degeneration, and denying the possibility of an exudate. However, even if the material proves to be an exudate, it is either composed of abnormal molecules or there are changes in the basement membrane, for the common albuminous and fibrinous exudates which occur in Bowman's capsule as the result of inflammation do not produce fibrin caps or capsular drops. We think that the exact analysis of this lesion may throw some light on the metabolic disturbances in diabetes.

SUMMARY

1. In 16 out of 290 necropsies on diabetics a crescent of material staining like fibrin was found between the basement membrane and the endothelium of the renal glomerular tufts. We call this *"the fibrin cap"*.

2. The fibrin cap occurs half as commonly as intercapillary sclerosis but has exactly the same age incidence and relation to high blood pressure.

3. It occurs with or independently of intercapillary sclerosis but is always associated with severe arteriolosclerosis.

4. Similar material is found between the epithelium and basement membrane of the capsule forming a *"capsular drop"*. This lesion differs from the *fibrin cap* in that it rapidly becomes organized into fibrous tissue.

5. The combination of fibrin caps, capsular drops and fibrin-staining hyaline changes in the extra-glomerular part of the arterioles is probably specific for diabetes.

6. The pathogenesis of these lesions is discussed.

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The gene theory has become one of the great unifying principles of modern biology. Far from being merely pawns with which the geneticist plays games to amuse himself, genes are the units that were aggregated, mutated, and recombined to give rise to the countless forms of subcellular, unicellular, and multicellular forms of life that exist now or have existed in the last 2 billion years. They are the sets of pattern molecules or templates with which each of us started development as a fertilized egg and they represent the essential self-duplicating units that we pass on to our children through the nuclei of our eggs and sperm.—Geo. W. Beadle.

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A STUDY ON RUPTURE OF THE COLLATERAL LIGAMENTS OF THE KNEE JOINT

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IT HAS BEEN the teaching in medical schools that isolated injuries to the collateral ligaments of the knee joint could be recognized by clinical examination. This according to the authors can also be demonstrated by x-ray.

The classical teaching has been that lateral mobility of the leg, when the knee joint is fully extended, is indicative of solution of the tibial collateral ligament. Likewise, medial mobility of the leg on the extended knee joint would indicate a similar lesion of the fibular collateral ligament.

Photographs describing the above teaching are shown in the 1946 edition of "Injuries to the Knee Joint" by Mr. I. S. Smillie of Dundee, Scotland. Mr. Smillie in his 1951 edition of this excellent book has questioned this teaching. This is the first published variation from the original teaching to my knowledge. In discussing injuries to the collateral ligament he states:

> "Complete solution rarely, if ever, exists as an isolated lesion, but is associated with rupture of the anterior or even the posterior cruciate ligaments, loss of the peripheral attachments of the medial meniscus and a fracture of the lateral condyle of the tibia."

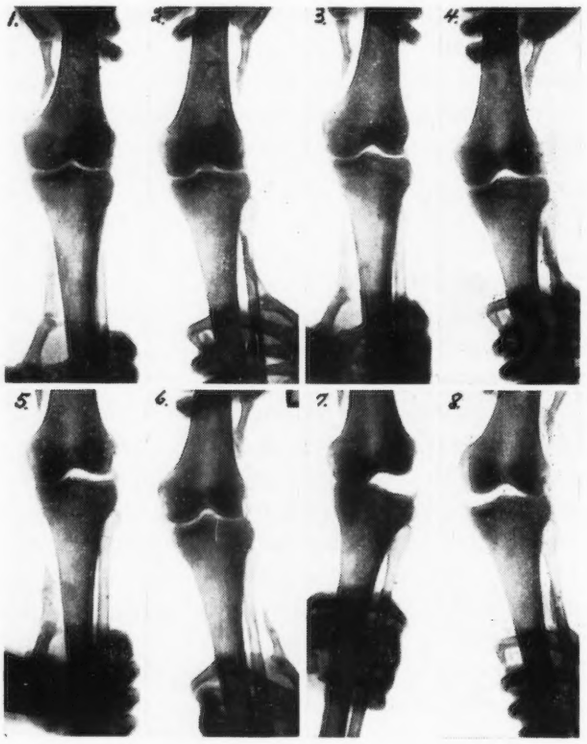
About a year ago dissections were made on a knee joint to prove a hypothesis that any injury to the collateral ligaments sufficient to give clinical and/or x-ray evidence of the injury must of necessity cause solution of *at least* the anterior cruciate ligament or a depressed fracture of the tibial condyle. Unfortunately, pictures to substantiate this were not obtained at the time. Accordingly the procedure was repeated about six months ago and x-rays taken to demonstrate the above deduction.

A knee joint was first dissected of all tissues save the capsule, the joint ligaments and the menisci. X-ray was taken as shown in Fig. 1. The patella can be recognized in the picture. In the remainder of the x-rays the hands are endeavouring to demonstrate any lateral or medial instability with all the power that could be exerted by the operator. The thumbs on the bone are firmly pressed towards the joint, while the fingers, on the opposite side, were forcibly trying to pry the joint apart.

Figs. 1 and 2 show absolute stability with all the ligaments intact.

Figs. 3 and 4.—Capsule of the joint is removed. Note the patella not present. The medial, lateral and both cruciates are intact. Testing for lateral and medial ligaments shows a stable joint.

Fig. 5.—The fibular collateral ligament was severed. (The severed ends can be seen). Testing for *lateral ligament* solution, however, demonstrates stability of the joint. The very slight widening shown was due to about a 5 degree flexion from the complete extension



allowed by a slight laxity of the cruciate. This occurred momentarily as heavy strain was put on the hands to separate the joint at its lateral aspect.

Fig. 6.—The tibial collateral ligament was severed. Testing again demonstrated absolute stability to medial strains on the extended knee.

Note.—In Figs. 5 and 6 the only ligaments left intact were the cruciates, thus demonstrating that these alone prevent any lateral or medial mobility, when the joint is extended.

Figs. 7 and 8.—The anterior cruciate ligament severed. Strain on the medial and lateral sides of the joint now show the instability that was classically described to demonstrate a solution of the medial and lateral ligaments respectively.

This simple procedure proves that, providing the tibial condyles are intact, any solution of the collateral ligament must of necessity also cause a solution of at least one of the cruciate ligaments, in order to produce any medial or lateral instability of the leg on the extended knee.

It is of utmost importance to recognize this fact. It proves that any lateral or medial instability of the extended knee joint following an accident is a much more serious injury than has, up to now, been taught to the medical profession at large.

THE DISAPPOINTING RESULTS OF PULMONARY RESECTION FOR BRONCHIECTASIS*

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TREATMENT OF BRONCHIECTASIS by pulmonary resection is now well established and has a low mortality. Several series of cases have been published with an operative mortality of less than 2%.[1 to 5] Most reports emphasize the low mortality and the successful outcome. Few have reported an investigation of failures or partial successes.[5, 6] It is well known that a great many patients are relieved of all their symptoms following resection. It is perhaps less known that some do not feel so satisfied.

The object of this investigation was not to confirm that resection is an excellent treatment for bronchiectasis. That is well known. It was to find the reason why some patients are disappointed with the results. Publication of successes is exhilarating but an investigation of failures may also be valuable.

Before giving this report, I wish to make three points. First, the patients to be discussed are not average patients with bronchiectasis. They were all accepted for service with the armed forces and at enlistment bronchiectasis was not present or was not so extensive that it was detected either by routine physical examination or by routine x-ray of the chest. Secondly, all these patients, having been diagnosed as having bronchiectasis and having had resection, have been pensioned. This pension is gradually reduced on a scale designed to compensate them for their residual disability. It is therefore not necessarily in their interest to minimize their symptoms. My third point concerns the use of the term "recurrent bronchitis". I use it for a condition which is variously labelled recurring bronchitis, chronic bronchitis, catarrhal bronchitis, asthmatoid bronchitis and bronchitis with bronchospasm.

Operations. — At Christie Street and Sunnybrook Hospitals between October, 1941 and December, 1949, 118 patients had complete or partial lobectomy and one had pneumonectomy for bronchiectasis. There was only one death due to operation. In 112, the operation was unilateral and in seven it was bilateral. All were men except one. Their ages varied from eighteen to forty-eight years. The median age was twenty-four. Nine only were thirty-five years of age or older at the time of operation; seven of these nine were disappointed with the result.

Reasons for disappointment.—Of the 118, 14 could not be followed leaving 104 for investigation. Each was asked this question: "Do you feel that the operation has been successful in relieving your symptoms and making you feel well?" Of the 104, 58 were completely satisfied, 24 were partly satisfied, and 22 were completely dissatisfied. Thirty-eight of the last two groups have been investigated enough to make a reasonable postoperative diagnosis to account for their present complaints. It is this group I am going to discuss.

Four are dissatisfied only because they have pain in the chest. This they describe as a deep-seated ache beneath the scar, coming on usually after exertion. It sometimes varies and becomes sharper in bad weather. Three are dissatisfied because thoracoplasty has been necessary for empyema following operation. Two are dissatisfied because they have developed pulmonary tuberculosis. Sixteen patients still have bronchiectasis. In only two of these has it been shown that the condition developed in a segment which seemed normal in bronchograms made before operation. There was nothing to suggest that they had atelectasis or pneumonia following the operation.

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*Given at the meeting of the Royal College of Physicians and Surgeons of Canada on September 19, 1951.
From the Chest Unit, Sunnybrook Hospital, Department of Veterans' Affairs, Toronto.

Of these 16 patients, nine have residual lingular bronchiectasis following left lower lobectomy and which was present before operation, in six of these it is the only segment involved. In one patient, lingular bronchiectasis is combined with bronchiectasis of the anterior segment of the left upper lobe which developed after operation. In two, it is combined with contralateral bronchiectasis.

One patient has residual right middle lobe bronchiectasis following right lower lobectomy. One has residual bronchiectasis of the anterior segment of the right upper lobe following right middle and lower lobectomy. In four patients there is residual contralateral bronchiectasis. One patient has bronchiectasis of the posterior subsegment of the left apicoposterior segment. Unfortunately, because of incomplete mapping, it is uncertain whether this is residual bronchiectasis or whether it developed postoperatively. I should add that 14 other patients with residual bronchiectasis are completely satisfied with the results of the operation.

I am uncertain about the significance of a long bronchial stump and there is little published information about it.[3, 7] In one patient, who still complains of cough with purulent sputum, the only abnormality found is a long stump following right middle and lower lobectomy. In another, this is also the only abnormality and he is dissatisfied only because he still has chronic cough with mucoid sputum. In one patient already referred to, there is a long stump following right middle and lower lobectomy and also bronchiectasis of the anterior segment of the right upper lobe. He was bronchoscoped and purulent material was aspirated from the stump. This, however, does not prove that the stump was actually the source of the pus. It may have spilled from the anterior segment of the right upper lobe which is bronchiectatic.

Lastly, there are 14 patients who complained before and after operation of recurring attacks of what they described as "chest colds". These were attacks of cough with mucoid sputum with malaise, shortness of breath, and wheezing. In all of them generalized rhonchi were found. Symptoms of ten have not been relieved, whereas in four they are slightly improved. I believe that these 14 men had two diseases, *i.e.*, bronchiectasis and recurrent bronchitis. Four still have both diseases, but in ten recurrent bronchitis is the only disease from which they are still suffering. The two diseases are distinct and the cure of the bronchiectasis by resection has not cured the recurrent bronchitis.

CONCLUSION

The points I wish to bring out are: first, the obvious importance of complete mapping of the bronchial tree before resection. Secondly, the importance of being quite sure that the lingular segment has been properly mapped and that it is free of disease before a left lower lobectomy alone is done. Thirdly, where it is known that residual bronchiectasis will be present, the patient should be warned that the operation may not relieve his symptoms completely. Fourthly, if the patient has both bronchiectasis and recurrent bronchitis, removal of the bronchiectatic segment may not cure the bronchitis. The last may sound elementary but it is easy when a patient complains of chronic or recurrent cough and sputum to concentrate one's attention on a bronchiectatic segment and overlook the separate disease of recurrent bronchitis. By this I do not mean that recurrent bronchitis is necessarily a contra-indication to resection for bronchiectasis of a degree which makes operation advisable. I do mean that one cannot expect the results of resection to be as good as when bronchiectasis exists alone.

The object of this report was not to announce our successes but to investigate our patients' disappointments. In case it has left you feeling that resection for bronchiectasis is not the excellent operation it is so often declared to be, I emphasize; first, that only one man died and, secondly, that of the 104 patients, 24 are known to be partly satisfied, and 58 are completely satisfied with the operation and have been relieved of a very unpleasant disease. Resection is an excellent operation and is the only means of permanent cure.

My thanks are due to Dr. Norman Shenstone and Dr. R. C. Laird for permission to publish their cases and to Dr. Peter Crassweller for his assistance in the follow-up of the patients.

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ACUTE PURULENT MENINGITIS IN CHILDHOOD*

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ONE OF THE MOST encouraging advances in modern medicine since the advent of the chemotherapeutic and antibiotic agents has been the reduction in the case fatality rate in acute bacterial meningitis. Not only has the case fatality rate been lowered but in those patients recovering from the acute stage of the disease the incidence of serious sequelæ has been decreasing. Therefore, these patients are not being saved as defective children to be a burden to themselves, their parents and the community.

Many factors play an important rôle in the improved results now obtained in the treatment of meningitis. These include early diagnosis, the proper selection, dosage and method of administration of the chemotherapeutic and antibiotic agents and the general supportive therapy.

The purpose of this paper is to discuss the incidence of the various types of acute bacterial meningitis admitted to the Hospital for Sick Children, Toronto, during recent years, the present-day method of treatment and the results obtained.

The accompanying graph reveals the yearly incidence of the types of meningitis most frequently admitted to this Hospital. Meningococcal infection rises during wartime and the predominance of this form of meningitis is clearly shown in the war years 1940-1945. During the past four years there has been a steadily rising incidence of Type B. H. influenzæ meningitis, until it has now become the type of meningitis most frequently admitted to the Hospital. As a result of the marked improvement in the treatment of tuberculous meningitis in recent years this hospital has become a treatment centre for cases of this disease occurring in Ontario. Many patients are transferred here who in the years prior to the advent of streptomycin would have remained at home as no specific therapy was known to be effective against this disease. Thus the incidence of patients with tuberculous meningitis admitted to hospital has risen considerably.

*From the Wards and Laboratories of the Hospital for Sick Children.

DIAGNOSIS

Since early diagnosis of the patient with meningitis is in practically every instance a prime prerequisite of successful therapy, some of the important facts which have become evident to us may be mentioned. It has been our experience that in most cases there is a direct relationship between late diagnosis and a fatal termination or high serious sequelæ rate. In the older child, the diagnosis of meningitis is relatively straightforward where a history of headache, fever, vomiting and stiff neck is usually obtained. The presence of a Kernig and Brudzinski sign on physical examination, and the finding of purulent spinal fluid on lumbar puncture confirms the diagnosis. However, in children under two years of age the diagnosis is not so easy in many cases. In this age group the greatest number of missed or late diagnoses occur and

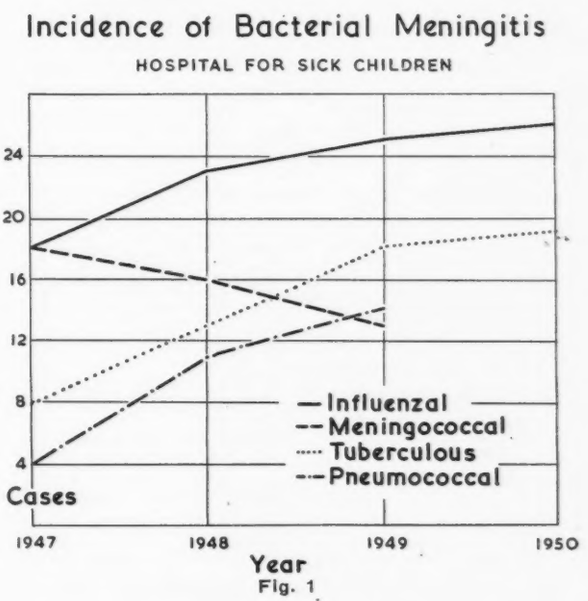

Fig. 1

consequently the highest case fatality rate. While there is usually a history of a preceding upper respiratory infection with fever, vomiting, irritability and refusal of feedings, and the presence of a bulging fontanelle with some neck rigidity, many of these signs and symptoms may be absent. In one of our cases of acute meningococcal meningitis, the only abnormality found was an ocular palsy, the rectal temperature of the patient being 99°. A diagnostic lumbar puncture performed without delay at this time will avoid the tragedy of a missed or late diagnosis, which may result in death, or if survival, a seriously handicapped child.

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MATERIAL AND TREATMENT

The treatment of the various types of acute bacterial meningitis has passed through many phases in the past twenty years, from the time when specific antiserum was first used, to the present time when the chemotherapeutic and antibiotic agents are the treatment of choice. With each additional new proved specific agent there has been a gradual reduction in the case fatality rate. With the present therapeutic regimen the percentage of successfully treated cases is the highest achieved to date.

The method of treatment of the various types of acute bacterial meningitis with respect to chemotherapeutic and antibiotic agents and general supportive measures has remained practically uniform over the past four years at the Hospital for Sick Children. These methods, therefore, have been given the test of time and the results have been satisfactory in a high percentage of patients. All the cases of Type B. H. influenzal, meningococcal and pneumococcal meningitis admitted to the hospital during the past four years form the basis of the statistical report of this paper.

TABLE I.

Year	*No. of patients*	*Deaths*	*Serious sequelæ*
1947	18*	3	1
1948	23	3	2
1949	25	3	1
1950	26†	2†	1
Total	92	11	5

*1 patient treated without intrathecal streptomycin.
†1 patient treated with intravenous aureomycin only and died six hours after admission.
Case fatality rate for 92 patients..... 11.9%
Serious sequelæ rate for 92 patients..... 5.4%
All cases bacteriologically proved by smear and culture of spinal fluid.

TYPE B. H. INFLUENZÆ MENINGITIS

Table I shows the annual incidence (1947-1950 inclusive), the case fatality rate and the serious sequelæ rate for this type of meningitis which has become the type most frequently admitted to this Hospital.

In Type B. H. influenzæ meningitis streptomycin is the antibiotic agent of choice. Controversy rages over the method of administration, dosage level and duration of treatment. While much has been written condemning intrathecal administration of this drug* we have not experienced untoward reactions in the dosage level and method of administration now employed in this hospital, and outlined below. We do not feel that in severely ill children with this disease adequate levels in the spinal fluid can be definitely assured by intramuscular use of streptomycin alone.

In children under two years of age, 25 mgm. of pure crystalline streptomycin diluted in 5 to 10 c.c. of distilled water is slowly injected intrathecally and is given daily for one to three days, depending on the result of the cerebrospinal fluid culture and the clinical response of the patient. In older children, up to 50 mgm. of streptomycin given intrathecally in the above manner may be safely used. One gram per day of streptomycin is given intramuscularly in divided doses every six hours for five to seven days. Sulfadiazine (soluble) in dosage of 2 to 3 gr. per lb. of body weight per 24 hours is given in divided doses every four hours and injected intravenously for the first two days and then given orally thereafter if the patient is retaining fluids by mouth. One-third of the daily dosage of soludiazine is given intravenously initially, and the remainder of that day's amount in equal four hourly injections. Sulfadiazine is continued for 7 to 14 days with a dosage regulated to maintain a blood level of 12 to 15 mgm. %.

It is interesting to note that on this regimen 74% of this series of Type B. H. influenzæ meningitis patients had negative cerebrospinal fluid cultures 24 hours after the first intrathecal injection of streptomycin, 12% after the second and 6% after the third. In four patients a strain grew out which was insensitive to streptomycin.

It has been our experience that with the above dosage schedule, the much feared reactions to intrathecal streptomycin are eliminated and the number of patients developing vestibular dysfunction and deafness is small. The prolonged administration of streptomycin intrathecally or intramuscularly in Type B. H. influenzæ meningitis is to be condemned as not only unnecessary, but contributing to the production of possible toxic manifestations.

In this series of 92 patients with Type B. H. influenzæ meningitis all but one received similar therapy; there were eleven deaths, giving a case fatality rate of 11.9%. Nine of these 11 deaths

*Hoyne, A. L. and Brown, R. H., *J. A. M. A.*, February 28, 1948.

were in children under two years of age, although less than half (40) of the patients were in this age group. There is, therefore, a much more serious prognosis in children under two years of age in this disease. Five patients showed signs of serious sequelæ on recovery from the acute stage of their illness. Evidence of this was apparent at time of discharge from the hospital and/or in subsequent follow-up visits to the meningitis clinic held to assess these patients at varying intervals up to three years after discharge from the hospital. These serious sequelæ included nerve deafness, blindness, mental retardation, spasticity and hemiplegia.

In our limited experience with the use of intravenous aureomycin in this disease we would concur with other workers* that it is definitely not a drug of choice in this disease.

TABLE II.

Year	*No. of patients*	*Deaths*	*Serious sequelæ*
1947	18	0	1
1948	16	4	0
1949	13	2	1
1950	19	1	0
Total	66	7*	2

*4 of these deaths acute fulminating cases.
All cases bacteriologically proved by smear and culture of spinal fluid.
Case fatality rate for 66 patients 10.6%
Serious sequelæ rate for 66 patients 3.0%

MENINGOCOCCAL MENINGITIS

In Table II the annual incidence, case fatality rate and serious sequelæ rate for this disease are shown (1947 to 1950 inclusive).

It is the consensus of most workers in this field that the drug of choice in the treatment of meningococcal meningitis is sulfadiazine. All the patients in this series received sulfadiazine therapy 2 to 3 gr. per lb. of body weight per day intravenously for the first two or three days every four hours, and were later given the drug orally when fluids were retained by mouth. A cerebrospinal fluid level of 12 to 15 mgm. %—or higher—was usually achieved by this dosage schedule, and in patients showing much higher levels hæmaturia was a rare occurrence. In addition, most patients received intramuscular or intravenous aqueous penicillin 200,000 to 800,000 units daily in divided dosage every four hours for 3 to 14 days. Intrathecal penicillin is not recommended in meningococcal meningitis as sulfadiazine in the above dosage readily passes into the cerebrospinal fluid and quickly gives an adequate level to control the growth of the meningococcus at this site. In patients showing severe shock and collapse, petechial hæmorrhages or extravasation of blood into the skin, we have been giving adrenal cortical extract intravenously in 25 c.c. doses every four hours, and cortisone 50 mgm. every four hours intramuscularly. The value of this therapy is difficult to assess. However, if there is temporary adrenal insufficiency, the employment of such measures seems rational.

TABLE III.

Year	*No. of patient*	*Deaths*	*Serious sequelæ*
1947	4	0	0
1948	11	1	2
1949	14	3	2
Total	29	4	4

All cases bacteriologically proved by smear and culture of spinal fluid.
Case fatality rate for 29 patients 13.9%
Serious sequelæ rate for 29 patients 13.9%

PNEUMOCOCCAL MENINGITIS

The yearly incidence, case fatality rate and serious sequelæ rate for this type of meningitis is shown in Table III (1947 to 1949 inclusive).

The most satisfactory method of therapy in this form of meningitis we have found to be combined intramuscular and intrathecal penicillin and intravenous sulfadiazine (soluble sodium sulfadiazine). The sulfadiazine is given in dosage schedule as outlined under the previous section. Aqueous penicillin is given intravenously or intramuscularly in dosage of 800,000 to 1,000,000 units a day in divided amounts every four hours for five to seven days, or longer if there is evidence of active infection. Pure crystalline white penicillin (Merck) is given intrathecally for two to three days in doses of 10,000 units in infants, up to 25,000 units in older children.

Several years ago, when less pure preparations of penicillin were given intrathecally and in larger doses than now found necessary, severe reactions resulted in a number of patients. We

*R. J. McKay, Jr., C. D. Cook and J. A. Davies, Paper presented at Society for Pediatric Research, Atlantic City, May, 1951.

have not experienced these untoward reactions with our present dosage and method of administration, and feel that in pneumococcal meningitis it is more advantageous to give penicillin intrathecally than to rely on obtaining adequate levels in the cerebrospinal fluid by giving large intravenous or intramuscular doses.

In these patients sulfadiazine is continued in reduced dosage 1 gr. per lb. of body weight per day every four hours for five doses daily, for one to two weeks following recovery.

Of great importance in pneumococcal meningitis is the drainage of foci of infection such as otitis media, mastoiditis and sinusitis. Grateful achnowledgment is made to the Department of Otolaryngology of the Hospital for their cooperation in this essential part of the treatment of these patients.

In the treatment of streptococcal and staphylococcal meningitis which have been uncommon in our experience, the same regimen as for pneumococcal meningitis has been employed. *B. coli* and pyocyaneus meningitis have been successfully treated with streptomycin intrathecally and intramuscularly, and sulfadiazine in dosages as outlined for Type B. H. influenzæ meningitis.

General Treatment in Purulent Meningitis

Every patient with acute purulent meningitis receives continuous intravenous injection of fluids, primarily because the patient is dehydrated and vomiting and, therefore, unable to retain liquids taken by mouth. The intravenous injection also acts as a vehicle for the administration of penicillin or soluble sulfadiazine which is given into the intravenous below the drip bulb, thus assuring the early establishment of an adequate blood level of the drug. The intravenous fluid used may be a solution containing two parts of 5% glucose to one part of normal saline, and is given in amounts of three ounces per lb. of body weight per 24 hours to infants and up to 2,000 c.c. per 24 hours to older children. When recovery of the patient commences in two or three days, and he is able to retain adequate amounts of fluids by mouth, the intravenous is discontinued and oral sulfadiazine is given in a reduced dosage aiming at keeping the blood level at approximately 10 to 15 mgm. %. Sodium bicarbonate in amounts of 10 to 20 gr. every four hours by mouth maintains an alkaline urine in most cases, but if this is not retained due to the patient vomiting, 40 c.c. of molar lactate added to each 1,000 c.c. of intravenous fluid will obtain the same results.

The administration of whole blood transfusions to these acutely ill patients as soon as satisfactory hydration is established has been found an excellent supportive therapy.

In Type B. H. influenzæ meningitis and pneumococcal meningitis, daily lumbar punctures are performed for intrathecal medication and to obtain fluid for culture and cell count. Rarely are more than three intrathecal injections of antibiotic necessary, as the spinal fluid culture is negative in the majority of patients after the first intrathecal injection of antibiotic. Following the diagnostic lumbar puncture in meningococcal meningitis, if the patient is progressing favourably from a clinical standpoint, subsequent lumbar puncture has been found unnecessary, although some investigators feel that drainage of the purulent spinal fluid may be of value.

Cases Not Diagnosed Bacteriologically on Initial Smear of Purulent Spinal Fluid

In some cases of meningitis, a definite diagnosis of the bacterial type cannot be made on examination of the purulent spinal fluid at the time of the initial lumbar puncture. Usually within twenty-four hours of culturing the spinal fluid an organism is identified. In such cases it has been our policy to give these patients 25,000 units of streptomycin and 25,000 units of penicillin intrathecally, and 800,000 to 1,000,000 units of penicillin and streptomycin intramuscularly in divided doses every four hours for the first twenty-four hours. Soluble sulfadiazine is given intravenously, 2 to 3 gr. per lb. of body weight per twenty-four hours, in divided doses every four hours. At the end of the first twenty-four hours of therapy there is usually a positive bacteriological diagnosis of the type of meningitis from the culture of the spinal fluid taken at diagnostic lumbar puncture, and the therapy is continued as outlined for the various specific types of meningitis previously discussed. If no organism is identified on culture of the purulent spinal fluid, combined therapy is continued until clinical recovery.

SUMMARY

The acute bacterial types of meningitis most frequently admitted to the Hospital for Sick Children during the past four years have been discussed in this paper, with particular attention to diagnosis, the present-day method of treatment, and the results obtained from the therapy outlined.

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555, University Avenue.

HEREDITARY TRANSMISSION OF PHYSICAL DEFECTS IN THE EMB FAMILY

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THE QUESTION of the transmission of characteristics whether physical, mental or moral, has been and is most important in the development and maintenance of high standards in the human race. Of these the physical are the most fundamental, the others being modifiable by contacts. This report is essentially concerned with physical defects.

At this time I am reporting similar physical anomalies occurring in four successive generations. I have seen the members of the last three generations and append photographs showing deformities of one member of each. Statements as to the first generation reported are made by EMB himself, a deformed member of the second generation and progenitor of the third and fourth generations here reported.

EMB states that *so far as he knows* his father was the only one of his ancestors with any physical deformity and his defect was trivial—the second and third toes on one foot were fused and were capped by two small nails.

This ancestor begat seven children, of whom four were physically normal, but EMB himself and two of his sisters were grossly similarly deformed as to both hands and both feet.

Only one of the deformed sisters married. She mothered one physically normal boy and one physically normal girl. She also gave birth to two sons and one daughter that were deformed. One deformed son married and begat a deformed son. The deformed daughter married and has produced successive offspring, but her home is in a distant area and EMB has never been able to learn whether any of these exhibit any developmental defect.

Of the second generation under discussion a photograph is appended showing the deformities of EMB himself. This graphically demonstrates the disabilities of his four extremities, and illustrates the fact that he is at best quite unable to make a living at a skilled trade or earn a good or reasonable wage in the labour market.

This man (EMB) married a woman of good physique who has no demonstrable defect. Their first two children were physically normal. The third was defective similarly to his father (see illustration marked EMB third generation). The question of making some attempt to avoid further conceptions for fear of their producing further defective offspring, was taken up with this couple. Apparently, in part at least due to either lack of interest or forgetfulness on the part of some they consulted, nothing came of this and their offspring eventually numbered thirteen, six showing physical anomalies of disabling character, five being grossly deformed in all four extremities similarly to their father.

Of this third generation, three physically normal members have married physically normal people; each of these couples have had children, and none of these have any demonstrable physical defect.

In this third generation the fifth sibling shows a physical anomaly not recognized as occurring previously in any member of any generation. There is a marked speech defect. There is also a "birth mark" of a ruddy type involving most of the lower part of the body and part of the left thigh. From the left knee to the foot the whole superficial area is a mass of varicosed veins. This was considered as due to arteriovenous aneurysm. Such was demonstrated in the area behind the knee above the joint and was dealt with surgically. The left foot is broader and shorter than the right and the toes are relatively large for the foot.

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This man married a physically normal woman. This couple have three children all physically normal. His defect was not genetic in origin apparently.

Again, of this third generation, the third child, deformed similarly to his father, married a physically normal woman. They have produced three children; the first a girl deformed as to both hands and feet (Fig. 3) (*note* 7 digits normal or rudimentary on the left hand and 4 on the right). The second a boy physically normal, the third a girl deformed in both hands and both feet.

It cannot be said that the deformity is less disabling in the later generations.

In this series no apparently physical normal sibling has at this date reproduced in offspring the hereditary defect exhibited by the deformed members. EMB himself, his wife and all their descendants are in the normal intellectual category. And all are, so far as I have known them,

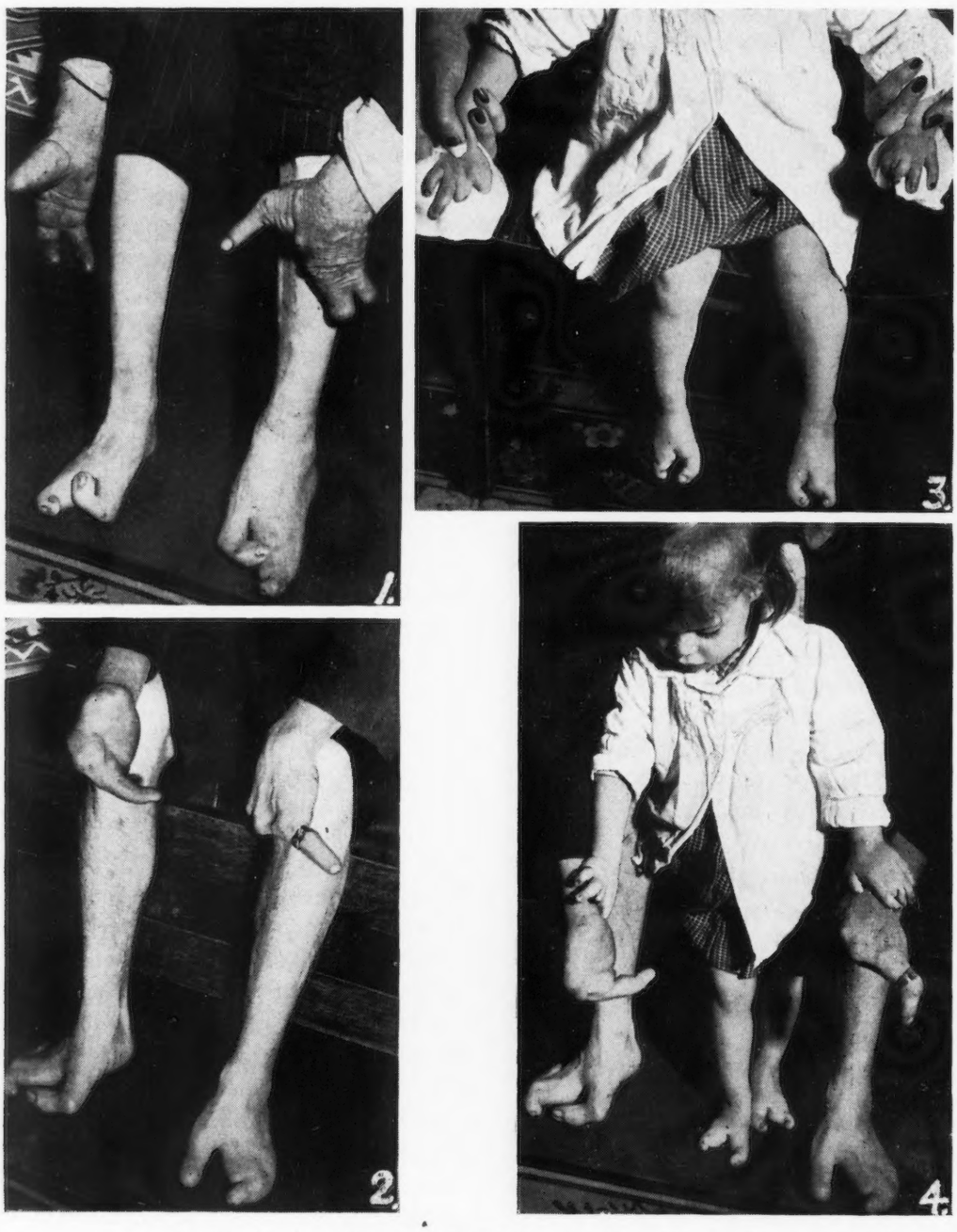

Fig. 1.—Second generation. Fig. 2.—Third generation. Fig. 3.—Fourth generation.
Fig. 4.—Composite of 3rd and 4th generation.

honest and good citizens and workers to the limits of their respective physical abilities.

Since none of EMB'S deformed daughters have married at this time, I have only reported on the progeny of his deformed sister. It completes the demonstration that this gross and disabling anomaly is inherited alike by males and females and is also transmitted by each sex.

It has been conclusively proved in the prolonged experimental feeding of animals on deficiency diets and particularly where vitamins A and D and riboflavin were lacking, that as a result, many of the progeny were born deformed. Since EMB has always been in the low income group, it must be considered as a possibility that the congenital disability of his fifth child may be due at least in part to malnutrition of the mother when enceinte with this child.

In this series all the children of the third generation, and those of the fourth who have a deformed parent, have lived or are living their early years in extreme adversity because the physical handicaps of the parents mean low incomes and consequent lack of necessities in the homes. The deformed siblings who have married are haunted and obsessed by fears of bringing into the world children so deformed that they also will be in adversity throughout their lives. And those still unmarried, since they are intellectually normal, undoubtedly have the same worries. Yet being human, it must be recognized that some of them will find life partners. Further it must be considered as very possible that some of these unfortunates might find mates in the very low intellectual groups. Offspring of such union would be, potentially, in still greater adversity.

Actually I have been consulted by several deformed members of this family requesting that sterilization be done. Having seen through so many years the distress and destitution suffered by these unfortunates and their dependents due to their inability to earn an income sufficient to maintain a reasonable standard of living, I am absolutely convinced of the righteousness and necessity of passing necessary legislation enabling this to be done, where those concerned request such.

I am indebted to Dr. H. V. Morgan for the pathological report on the case of arterio-venous aneurysms.

THE EFFECT OF ADRENAL STEROIDS ON EOSINOPHILS*

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RECENT YEARS have witnessed a great interest in the adrenal corticotrophic hormones and rapid advances in adrenal steroid investigation. One of the striking hæmatological findings following adrenocortical stimulation is an eosinopenia, and so constant is this effect that it is used as a clinical test of adrenocortical activity.[1] Administration of certain of the end-products of adrenocortical stimulation, cortisone[2] and compound F[3] will also produce an eosinopenia in some cases.

This eosinopenia leads one to the rather intriguing problem of the fate of the eosinophil. Any hypotheses that are advanced must take into consideration the facts that whether the stimulation is one of stress, ACTH, or adrenal steroids it occurs relatively rapidly, a 50% drop taking place in four hours, and that eosinopenia results from liberation of some potent eosinopenic substance of the adrenal cortex presumably humoral. This humoral eosinopenic substance may then produce an eosinopenia in one of three ways: first, that there may be a peripheral intravascular lysis of the cells; second, that there may be a sequestration of the cells from the blood stream into a tissue or tissues, temporarily or permanently; and third, that in the bone marrow there is inhibition of production or release of the cells. The latter possibility might be associated with or combined with either or both of the first two.

If a peripheral intravascular lysis of the eosinophils occurs it would seem possible that a similar destructive action on the cells would take place *in vitro* when they were exposed to the same hormonal substance. The object of the present study was to investigate this possibility.

*This study was carried out in the Metabolic Unit and Hæmatology Laboratory of the Vancouver General Hospital, Vancouver, B.C.
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A survey of the literature has revealed only three authors who make definite comments on the possibility of the occurrence of eosinolysis. Godlowski[4] believes that such an effect takes place in the blood stream, although he has not yet described the detailed mechanism of this action. On the other hand, Thorn, Forsham *et al.*[2] quote *in vitro* studies which showed no evidence of lysis of eosinophils by adrenal steroids. The details of this work are not known to us, but it is supposed that these experiments are of a similar nature to the second of our studies reported below. Baldridge *et al.*[14] also demonstrated that cortisone has no lytic effect on eosinophils *in vitro*.

We have made two series of *in vitro* observations. The first was a study of the effects of plasma from patients with an ACTH-induced eosinopenia on the eosinophils of blood from a second individual. The second was a study of the direct effects of adrenocortical steroids and ACTH on eosinophils.

METHODS

With the exception of one case, specially selected because of a high eosinophil count, specimens of blood were taken from a random selection of donors. The exception was a case of Loeffler's syndrome. For simplification these specimens of blood will be referred to as "donor blood". Dry ammonium and potassium oxalate[8] was used in most cases as the anti-coagulant, but in four cases heparin was used. Eosinophil counts were performed by a modification of the method first described by Dunger[6] using 5 c.c. of 2% eosin and 5 c.c. of acetone added to 90 c.c. water diluent. Blood was diluted 1 in 10 in a Hellige white cell pipette. Counts were done within five minutes using either a Spencer bright line hæmocytometer or a Fuchs-Rosenthal chamber. Incubations were performed at 37° C. in an air oven. In the first study specimens of undiluted donor blood were incubated at the same time as the diluted blood and acted as controls. The period of incubation varied from 4 to 18 hours.

1. EFFECTS OF PLASMA FROM PATIENT WITH ACTH INDUCED EOSINOPENIA ON EOSINOPHILS OF DONOR BLOOD

With the experimental and clinical use of continuous intravenous ACTH it has been noted that a marked eosinopenia was consistently produced after 4 to 8 hours of administration.[8] It was presumed that at the time of this eosinopenia the plasma from such patients must contain potent eosinopenic material presumably derived from the stimulated adrenal cortex. At the height of ACTH stimulation, plasma was obtained in ten instances for use in *in vitro* experiments, and this plasma shall be referred to as "eosinopenic plasma". This "eosinopenic plasma" was added to donor blood with known eosinophil counts and was incubated as described below.

The first two incubations were performed on donor blood obtained from the patient with Loeffler's syndrome, but the later ones were performed on blood having relatively normal eosinophil counts. It should be noted that the case of Loeffler's syndrome responded to ACTH therapy later, with a very marked drop in his eosinophil count from between two and three thousand to almost zero.[7]

The first incubation was carried out using one part of plasma to one part of donor blood, but it was considered that dilution of the humoral substances present might be sufficient to inhibit a lytic action, and all other incubations were carried out using nine parts of plasma to one of donor blood. The dilutions, however, made it necessary to count four or more fields in all cases, except the first two where the high count obviated the necessity for this.

From the first six incubations in this study and from the accompanying six control specimens blood films were made and stained by Wright's Stain.

RESULTS

The detailed results are shown in Table I. It will be seen that no significant alterations occurred in the eosinophil counts after the incubations. Careful study of the blood films revealed no morphological changes between the eosinophils of control or diluted blood after the incubations.

2. EFFECT OF ACTH AND ADRENAL STEROIDS ON EOSINOPHILS OF DONOR BLOOD

To 5 c.c. of donor blood was added a suitable dose (*vide infra*) of one of three hormones,

ACTH,* cortisone,* or compound F*, and to one series of specimens a mixture of ACTH and cortisone. The resulting mixtures and control specimens of donor blood were then incubated at 37° C. for from 4 to 10 hours.

RESULTS

The detailed results are shown in Table II. It will be seen that in no instance was there a significant alteration in the numbers of eosinophils present. Thus no lytic action on the eosinophils had occurred under the influence of the hormones used.

TABLE I.

EFFECT OF PLASMA FROM PATIENT WITH ACTH-INDUCED EOSINOPENIA ON EOSINOPHILS OF DONOR BLOOD

Dilution blood/plasma	*Anticoagulant used*	*Duration of incubation (hrs.)*	*Eosinophil count/c.mm.*		
			Before incubation	*After incubation*	
				Control blood	*Blood + plasma†*
1/1	Pot. and ammon. oxal.‡	4	3,275*	3,220	3,244
1/9	"	4	2,600*	2,697	2,664
1/9	"	4	66	66	66
1/9	"	4	660	650	770
1/9	"	4	55	55	44
1/9	Heparin	4	111	111	100
1/9	"	4	455	422	555
		8		422	333
1/9	"	4	122	122	111
		8		111	111
1/9	"	4	166	133	222
		8		144	111
1/9	Pot. and ammon. oxal.	4	333	333	300
		18		266	422

*High eosinophil count from a case of Loeffler's syndrome. This patient was later given ACTH intramuscularly and in 48 hours his count fell to 33/c.mm.

†Count after correction for dilution with plasma from patient with ACTH induced eosinopenia.

‡Anticoagulant reference (9).

DISCUSSION

Consideration of the above results must involve careful analysis of several points. *In vitro* studies have obvious limitations when applied directly to *in vivo* conditions. It should be noted in this respect that anticoagulants were employed. The authors hope to report later on similar studies using silicone coated glass ware. In most of the incubations a potassium and ammonium oxalate anticoagulant[9] was used. While this could conceivably act as a blocking agent to the hormones, the authors are unaware of any evidence of such an action. In the remaining incubations heparin was used. In view of Godlowski's[4] observations on the inhibiting effect of full heparinization on the eosinopenic response following ACTH, some criticism might be put forward against the use of this substance. However, his contention is that heparin mobilizes the tissue eosinophils arrested in the lymphoid tissue, thus counteracting the eosinopenic effect of ACTH and this will not occur under the conditions of our studies, *i.e. in vitro.*

Several authors[10, 11, 12] have discussed the importance of a satisfactory technique for performing eosinophil counts, as this procedure involves a fairly considerable margin of error, particularly with low counts. It follows that in the diluted blood of the first study the eosinophil counts tend to lose some accuracy over and above the normal margin of error. A variation of 32% was noted in one case. In the majority, however, the variation is under 20% and in the high counts of the case of Loeffler's syndrome the error is less than 3%. An endeavour was made to

*The dose of ACTH used was calculated as follows—from the observations made in the Metabolic Unit of this hospital(8) it was known that 1 mgm. of ACTH per hour in an intravenous drip was certain, in normal individuals, to produce a marked eosinopenic effect in 4 hours. Thus, without allowing for any loss of ACTH to the extravascular tissues, one could make a crude calculation that 4 mgm. of ACTH in 6,000 c.c. of blood was an effective dose for a 4 hour period, from which, by proportion, 0.003 mgm. would be adequate in 5 ml. blood. The actual amount of ACTH used was approximately 0.026 mgm., or about ten times the requirements to produce an eosinopenia *in vivo*.

The amounts of cortisone and compound F used were identical. In the first series of incubations these were calculated to give half the equivalent concentration to that produced in the total blood volume by 100 mgm. of the hormones.

It was considered, however, that this concentration might be inadequate, as it is possible that stimulation of the adrenal cortex by ACTH may produce a much greater quantity of the hormones. A second series of incubations was therefore carried out using more than twenty times the original concentration.

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minimize the margin of error in this study by duplicating counts. In most cases this was done by separate individuals.

It is considered that if the eosinophils were being actively destroyed by the hormones, one-half would have disappeared at the end of 4 hours' incubation. Not only has this not occurred, but there is no consistent trend to suggest that a slower but progressive diminution of numbers of eosinophils is taking place.

TABLE II.

EFFECT OF HORMONES ON EOSINOPHILS AFTER INCUBATION

Hormone used	*Concentration hormone mgm./100 c.c. blood*	*Eosinophils/c.c. after incubation*		
		0 hours	*4-6 hours*	*8-10 hours*
Cortisone	0.68	122	111	
"	"	341	260	272
"	"	198	189	161
"	"	212	237	198
"	"	126	147	111
ACTH	0.06	198	183	172
"	"	212	191	186
"	"	126	118	111
"	"	182	194	161
"	"	355	399	
ACTH and cortisone				
"	0.68	198	215	180
"	"	212	169	175
"	"	126	95	100
"	"	205	205	177
"	"	55	44	
Compound F.	0.68	293	250	260
"	"	127	115	122
"	"	146	138	132
"	"	135	151	121
"	"	106	93	105
Cortisone	20.0	143	111	122
"	"	105	111	110
"	"	176	194	183
"	"	110	73	100
"	"	321	366	312
Compound F.	20.0	143	122	153
"	"	67	57	72
"	"	270	267	300
"	"	161	158	139
"	"	237	222	219

In this study Wright's stain is of limited value, for while there may be no demonstrable morphological changes noted, it is possible that a biochemical or metabolic change may have occurred which is not reflected in the morphological picture. Such changes *in vivo* may possibly result in removal of the cells from the blood, the normal life span of 8 to 12 days[13] being reduced to a matter of hours. While this is an attractive hypothesis, the observations of Solomon and Humphreys[5] on differential counts during recovery from an eosinopenia are against it, for they found that there was no increase in the younger forms of eosinophils following recovery from ACTH-induced eosinopenia, and we feel therefore that it can be discarded.

SUMMARY

Two series of *in vitro* observations designed to investigate the possibility of the eosinopenia which follows adrenocortical stimulation being due to lysis of eosinophils are reported.

1. No reduction in numbers of eosinophils after 4 to 18 hours incubation was noted to which was added plasma obtained from patients with a maximal eosinopenic effect produced by ACTH.

2. There was no effect on the numbers of eosinophils present after similar incubations of blood with presumably effective concentrations of (a) ACTH; (b) cortisone; (c) ACTH and cortisone; (d) compound F.

3. No morphological changes between the control and diluted blood were noted in films stained with Wright's stain after 4 hours' incubation of the type mentioned in 1 above.

It is concluded from these *in vitro* experiments that the eosinopenia that occurs following ACTH administration is unlikely to be due to intravascular destruction of circulating eosinophils.

We wish to thank Dr. W. H. Perry, Hæmatologist, Vancouver General Hospital, for his helpful advice and criticism and for the use of the facilities of the Hæmatology Laboratory, and Dr. R. B. Kerr, Professor of Medicine, for his encouragement and suggestions.

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THE SCABIETIC PROBLEM*

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ONE HUNDRED YEARS AGO it was generally held that scabies was caused by some internal metabolic upset. It is now known that it is caused in man through an invasion of the cuticle, in most cases, by the mite *Sarcoptes scabiei* of the variety *hominis*. This variety is morphologically similar to those causing scabies in animals, but the physiology differs. Two workers have added greatly to our recent knowledge of the scabietic problem: Mellanby[1] and Heilesen.[2] Four stages are recognized in the development of an adult Sarcoptes: the egg, the larva, the nymph, the male, and the immature female. After fertilization, the immature female becomes ovigerous and develops in size to twice that of the male. Successful infection of a patient is accomplished by a newly fertilized female. The parasite selects an area on one of the sites of election and in approximately one hour buries itself in the stratum corneum. It may remain here or continue as far as the rete mucosum. In this burrow it remains for the rest of its life unless forcibly removed. Two or three eggs are laid each day for a period of from four to six weeks. The eggs hatch in three to four days. Larvæ leave the burrow and enter hair follicles. Here nymphs develop and in turn molt to produce adult males and immature females in four to six days. Less than 10% of the eggs ever give rise to adult Sarcoptes. A fully developed case of scabies may show from five to two million fully developed female parasites although the average is fifty to five hundred.

A clinical diagnosis of scabies is made on the finding of adult female Sarcoptes in typical burrows where they appear as whitish ovals with dark pigmentation at the front. These are found on the following sites of election: hands and wrists, elbows, feet, penis and scrotum, buttocks, axillæ, and breasts. In infants typical burrows with vesiculation are often seen on the face. Scabies may be atypical and difficult to diagnose in people of very cleanly habits. Lesions may be limited to a few papules, *e.g.*, on the forearm. Nine cases out of ten can be diagnosed from the wrist and arm lesions alone. A Sarcoptes should in all cases be located and removed with a sharp instrument for microscopic identification.

*From the Department of Medicine of the University of Western Ontario.

In a primary case of scabies symptoms are slow to develop. Until sensitization occurs there may be multiple infestation without subjective or readily apparent objective symptoms (this accounts for so-called Norwegian scabies). After one to three months erythema about the burrows and follicular papules develop with associated severe nocturnal irritation and excoriation. Thereafter any reinfection will be accompanied by objective and subjective symptoms soon after the first Sarcoptes becomes established.

Scabies is transmitted in over 90% of cases by direct personal contact. It need not necessarily be prolonged. Sarcoptes organisms die in fomites at normal room temperature within several days. The chances of contracting scabies by sleeping in a bed which has been occupied the night previously by an infected individual are less than one in two hundred. The British Ministry now considers it unnecessary to disinfest fomites.

The incidence of scabies varies, increasing tremendously during periods when large groups of transient people are brought together. It varies roughly from 0.1% of the population to as much as 5%. Historical records indicate that epidemics can and do occur in cycles which may be independent of wars. However, during wartime it always increases in geometric progression in both incidence and importance (Friedman). Scabies is most commonly seen in the spring and winter. Unconscious (asymptomatic) carriers play an important part in the spread of the disease. Every patient is an unconscious carrier at some stage which in unsensitized cases may be for a period of several months. There is a higher incidence of scabies among females and children than among males. The problem of epidemic prevention is best handled by thorough examination and prompt treatment of all active cases and contacts, even casual ones.

A case of scabies may (1) if sensitized, cure itself by removal of active mites by the fingernails or so keep itself in check that it remains indefinitely tolerable (hence the name "Seven Years' Itch"); (2) become secondarily infected with the production of impetigo like lesions; (3) become eczematized by invasion of the opened skin areas with normal skin staphylococci, streptococci, etc., and consequent bacterial hypersensitivity to these; (4) form large prurigo papules about burrows where sensitization has occurred; (5) become diffusely eczematous and weeping if overtreated.

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Approximately 15 to 25% of cases referred with the diagnosis of scabies are found to have non-scabietic lesions. Most common of these are pediculosis, nummular eczema, papular urticaria, pityriasis rosea, contact dermatitis, seborrhœic dermatitis, acute psoriasis and secondary syphilis. It is important to remember that dual infections occur with some frequency (especially scabies and pediculosis, scabies and syphilis).

Therapy should be directed primarily against secondary infection when this amounts to frank impetigo, otherwise primary anti-scabietic therapy is indicated. A safe and effective antibiotic preparation is bacitracin 500 units per gram in an ointment base. There are many methods of antiscabietic treatment, several of which are extremely effective. Mellanby has ably classified these as to percentage of mites killed after one application of therapy.

TABLE I.

Treatment	*Mites killed percentage*
Sulphur ointment B.P.	97–100
Marcussen's ointment	100
Flowers of sulphur	15
Thiosulphate—HCl	25
Sulphur soap	17
Internal sulphur	0
Derris root lotion	73
Rotenone emulsion	76
Pyrethrum preparation	59–94
Betanaphthol	82
Lethane	68
Dimethyl-diphenylene disulphide	100
Benzyl benzoate (20% emulsion in water)	99.9

It is noted that four substances, sulphur ointment, Marcussen's (Danish) ointment, demethyl diphenylene disulphide and benzyl benzoate, are most effective. Two of these are in common use today—(1) benzyl benzoate emulsion; (2) sulphur ointment. An excellent example of the first is the formula chosen by Gaines W. Eddy (benzyl benzoate 10%, D.D.T. 1%, benzocaine 2%, Tween 80 2%, water q.s. to make 100%) and reported by Carpenter *et al.*[3] R. Domenjoz[4] (Geigy Lab. Basel) has developed a new scabieticide (crotonic acid-N-ethyl-O-toluidide). In a 10% ointment base it is called Eurax. It is about as effective as benzyl benzoate, is antipruritic, bacteriostatic, has a low index of sensitivity and does not cause any systemic toxic effects. Wilfred E. Wooldridge,[5] A. Benson Cannon and Marvin E. McCrae[6] report encouraging results with a 1% gamma isomer of 1, 2, 3, 4, 5, 6, hexacyclohexane in an ointment base. In 1946 A. K. North, B.Sc., of the Canada Pharmacal Company conceived the idea of using a well-known insecticide, isobornyl thiocyanoacetate, in an emulsion base as a scabieticide and pediculocide. Antiscabietic therapy with this compound was begun in my clinic and private practice in 1946, using 1.4% of the active principle in an emulsion base (Cidalon). In 300 cases using a two day treatment with this preparation the relapse rate was approximately 15%. This was confirmed by Norman M. Wrong.[7] It was then decided to increase the concentration of isobornyl thiocyanoacetate to 4% using the original emulsion base. In 700 cases of active scabies treated with this preparation the results have been satisfactory. Using the original two day treatment the cure rate has been 99.8%. Cidalon is a white emulsion with a mild not unpleasant odour, has a low index of primary irritation (0.2%), as yet has shown no evidence of producing allergic sensitization, is markedly scabieticidal and pediculocidal, and is mildly bacteriocidal. It can be used with safety on the scalps and faces of infants and has shown as yet no evidence of generalized toxic reactions.

Following use of a scabieticide soothing therapy is indicated. If eczematization is present Vioform 0.5 to 3% in an ointment or oily lotion is indicated, otherwise soothing lotions (calamine linament, etc.) or ointments (zinc oxide) with or without the addition of ichthyol may be used. Soothing detergents should be used in cleansing (lavoderm, phisoderm, lowila, etc.) until the skin has healed. Soap and wool should be kept away from all affected skin surfaces until healing has occurred. Cases requiring special attention are those where large papules (post-scabietic prurigo) have formed about active burrows. Here antiscabietic therapy should be repeated three to six weeks after the primary treatment has been given as active mites often remain despite adequate early care.[8] Six such cases were seen in this author's series, and in several the lesions persisted for eight to twelve months despite all therapy.

Instances of diffusely weeping eczematous scabies are seen if overtreatment has occurred (usually with the use of 20 to 30% benzyl benzoate or compound sulphur ointment over an extended period). Here colloidal baths, soothing lotions and ointments, soapless detergents, should be used with sedation as necessary.

SUMMARY AND CONCLUSIONS

1. Sensitization to the Sarcoptes is important in determining the incubation period.

2. The diagnosis in all cases should be confirmed by locating, removing and microscopically examining a mite, as scabies may be atypical in very clean people.

3. Scabies is transmitted in over 90% of cases by direct contact. No longer do we disinfest fomites.

4. Epidemics usually occur during wartime but may be independent. Incidence is highest in females and children. Epidemics are best handled by prompt therapy of all active cases and all (even casual) contacts.

5. If infection is impetigo-like treat this first (with *e.g.* bacitracin ointment). Otherwise use a good scabieticide and do not overtreat. This author has used 4% isobornyl thiocyanoacetate (Cidalon) in 700 cases with a primary cure in 98.8%.

6. Follow this with soothing and (if necessary) antieczematous therapy.

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THE LATE RESULTS OF PNEUMOTHORAX THERAPY*

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PNEUMOTHORAX THERAPY seems to be following a course similar to that of other methods used in the treatment of persons with pulmonary tuberculosis. Twenty to twenty-five years ago, its value as a means of checking the progress of pulmonary tuberculosis was probably overestimated. Patients who, in the light of present knowledge, were not suitable candidates for collapse therapy, were started on artificial pneumothorax. In some cases, pneumothorax therapy was continued when, in all probability, it should have been abandoned as soon as it was clear that an effective degree of collapse of the area, or areas, of disease was not being obtained. Approximately ten years ago, some clinicians, discouraged by the results that they were obtaining with pneumothorax therapy, began to publish reports about the harmful effects of this form of treatment.

More recently, since pneumoperitoneum therapy became a popular form of treatment and streptomycin and para-amino-salicylic acid became generally available, many clinicians seem to have lost sight of the fact that artificial pneumothorax is still a valuable form of treatment in selected cases. In other words, the value of pneumothorax therapy appears to be underestimated at the present time.

The late results in a series of 120 patients with pulmonary tuberculosis in whom pneumothorax therapy was discontinued during the five-year period between 1941 and 1946 will be described in the present communication. All of the patients in this group were given their initial pneumothorax treatments in hospital and thereafter followed in an ambulatory pneumothorax clinic. Patients in whom it was impossible to establish an effective pneumothorax or in whom complications occurred during the early stages of treatment were excluded from the present series. None of these patients were given streptomycin either during the period that they were receiving pneumothorax therapy or in the post-pneumothorax follow-up period. All have now been observed for from two to seven years following discontinuance of this form of therapy.

Tables I, II and III depict the findings in this group of patients.

Most of the patients (Table I) in this group had moderately far-advanced pulmonary tuberculosis when pneumothorax therapy was initiated. Seventy per cent had open, and infectious, tuberculosis. On the average, pneumothorax therapy was maintained for 30 months in the cases of minimal disease; for 63.3 months, in the moderately far-advanced cases; and for 65.5 months, in the far-advanced cases.

Table II reveals that 112 of the 120 patients in this group were living two to seven years after cessation of pneumothorax therapy. One

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hundred and six (88%) of the total number of persons were well and working. Their disease, according to the new classification of pulmonary tuberculosis, was inactive. Six of the patients still living at the end of the period of observation had active disease. Eight were dead. Five of the latter had moderately far-advanced pulmonary tuberculosis when pneumothorax therapy was instituted; three had far-advanced disease at the time of institution of pneumothorax therapy.

TABLE I.

CASES CLASSIFIED AS TO EXTENT OF PULMONARY TUBERCULOSIS AND SPUTUM FINDINGS PRIOR TO PNEUMOTHORAX

Extent of pulmonary tuberculosis		*Sputum positive for M. tuberculosis*	*Sputum negative for M. tuberculosis*	*No report*
I. (Minimal)	6	3	3	—
II. (Moderately far-advanced)	110	79	27	4
III. (Far-advanced)	4	3	1	—
Total	120	85 (70.8%)	31 (25.9%)	4 (3.3)%

TABLE II.

CASES CLASSIFIED AS TO LATE RESULTS TWO TO SEVEN YEARS FOLLOWING DISCONTINUANCE OF PNEUMOTHORAX

Number of living patients	112	
With inactive disease		106 (88)%
Active disease		6
Number of patients deceased	8	
Total	120	

Extent of disease	*Living — Inactive disease*	*Living — Active disease*	*Deceased*	*Totals*
I.	6	..	..	6
II.	99	6	5	110
III.	1	..	3	4
	106	6	8	120

TABLE III.

CASES WITH INACTIVE DISEASE CLASSIFIED AS TO ROENTGENOGRAPHIC EVIDENCE OF CAVITY PRIOR TO PNEUMOTHORAX AND AS TO DURATION OF PNEUMOTHORAX THERAPY

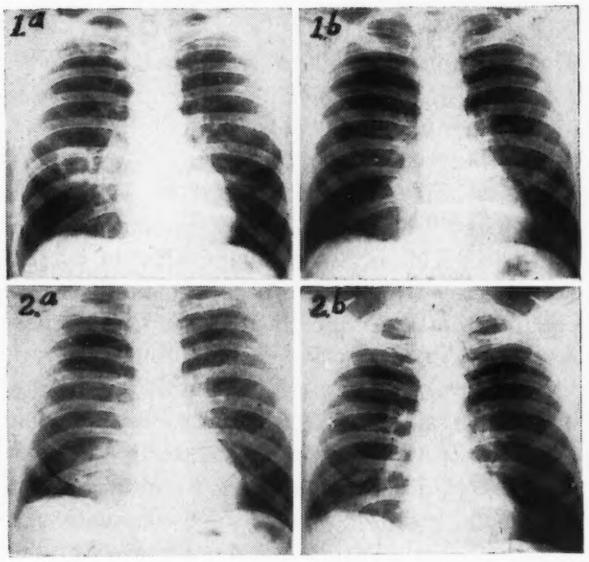
Extent of disease		*Minimum-maximum duration of pneumothorax*	*Numbers of cases 0 - 23 months*	*24 - 47 months*	*48 - 71 months*	*72 - 83 months*	*Total cases*
		(months)					
Without x-ray signs of cavity	I.	10 - 39	1	5	..	..	6
	II.	16 - 72	4	20	18	1	43
	III.	63	..	..	1	..	1
							50
With x-ray signs of cavity	I.	..	..	..	..	..	..
	II.	15 - 75	4	21	29	2	56
	III.	..	..	..	..	..	..
							56

Examination of the data recorded in Table III reveals that slightly more than half (56) of the 106 persons whose disease was classified as inactive at the end of the period of observation, presented clearly defined roentgenographic signs of cavity at the time of pneumothorax therapy was initiated. Examination of the data in this Table also shows that, in general, pneumothorax therapy was maintained for longer periods in the patients whose chest roentgenograms disclosed signs of cavity prior to the institution of this form of treatment than in the patients whose films failed to reveal evidence of cavity.

The accompanying summaries and illustrations depict the findings in three representative patients:

CASE 1

A male, 32 years of age, had a large cavity in the lower portion of his right lung. His sputum contained tubercle bacilli. Pneumothorax was instituted and maintained for 5½ years. When his right lung was allowed to re-expand, it became evident that his cavity had closed. His sputum has been consistently negative since pneumothorax therapy was instituted (see Figs. 1 and 2).



CASE 2

A female of 23 years had extensive disease, with cavity, in the right lung. Pneumothorax was instituted and maintained for 5 years. Subsequent chest roentgenograms reveal that a remarkable degree of resolution of the tuberculous process took place during the course of pneumothorax therapy. Films taken following re-expansion of the lung disclose only a few linear abnormal shadows. The sputum became negative soon after induction of the pneumothorax (see Figs. 3 and 4).

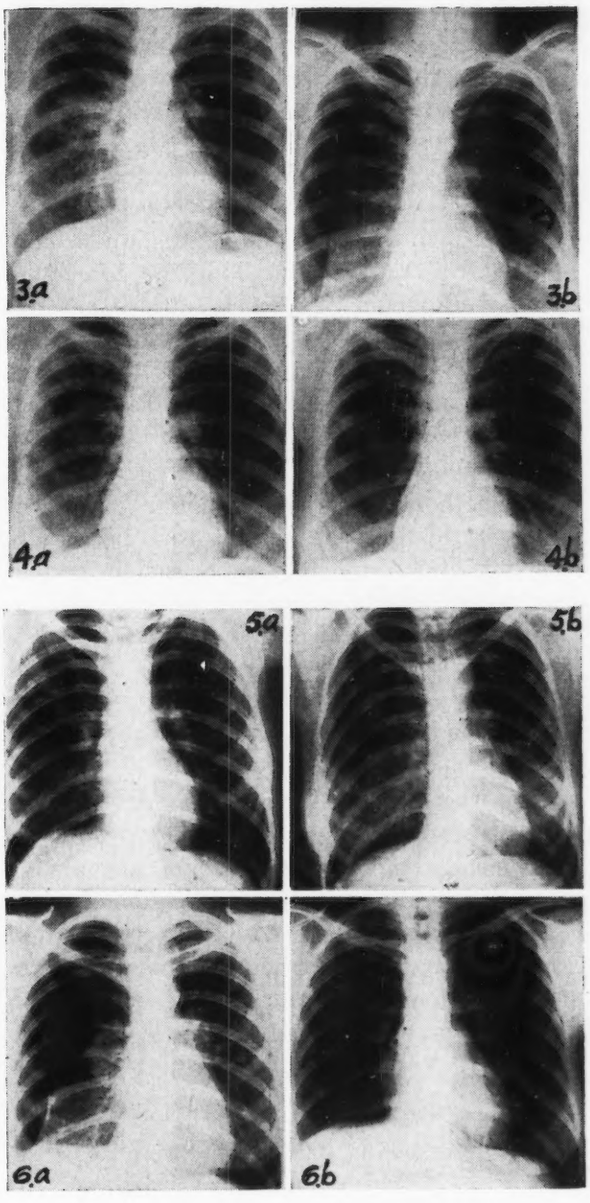
CASE 3

A female, 23 years of age, the onset of whose illness was marked by a copious hæmoptysis, was found to have extensive disease in the upper portion of the right lung. Pneumothorax was induced. This was supplemented, at a

later date, by a pneumonolysis. Pneumothorax therapy was maintained for 2 years. The end result was eminently satisfactory (see Figs. 5 and 6).

DISCUSSION

The favourable results obtained by employing pneumothorax therapy in the treatment of the group of patients whose findings have just been



recorded, appear to be due to the consistent application of a few basic principles. These basic principles are as follows:

1. Cauterization of adhesions early in the course of pneumothorax therapy, or if the adhesions cannot be safely and satisfactorily severed, prompt discontinuance of this form of collapse therapy.

2. Maintaining a selective collapse rather than allowing a large portion of, or the entire lung to collapse.

3. Maintenance of pneumothorax therapy for a sufficient length of time. The period that this form of collapse therapy should be maintained appears to be related to the extent and the nature of the disease at the time of induction of pneumothorax therapy and the date at which sputum convention takes place.

All of the patients in the group under consideration in whom the institution of pneumothorax therapy did not yield a completely satisfactory collapse of the area of disease within four to six weeks were subjected to a thoracoscopy and, if necessary, a pneumonolysis. Every effort was made to maintain only a selective collapse throughout the period of pneumothorax therapy. The findings recorded herein seem clearly to indicate that patients with minimal to moderately far-advanced lesions should be kept on pneumothorax therapy for two to three years and that patients with more advanced lesions, if given this form of collapse therapy, should be kept under treatment for four to six years. Experience acquired in the course of this study also indicates that lungs which have been kept partially collapsed, even for long periods, can be expected to re-expand without undue difficulty and seemingly with little loss of respiratory efficiency.

The findings in the present study are in line with certain of Eli H. Rubin's findings. The latter recently reported that in a group of patients similar to the group described herein, pneumothorax therapy had yielded good results in 90% of the cases. Ten years ago Rubin reported that good results had been obtained in 75% of a series of cases treated by means of this form of collapse therapy. Sigurd Cold of Denmark has also reported favourable results. He treated 200 patients with artificial pneumothorax, and obtained favourable results in 79% of his patients who had small cavities and in 73% of those who had moderately large cavities.

Many phthisiologists seem to be inclined to discourage the use of pneumothorax therapy at the present time, this in spite of the fact that much more is known about the indications for this form of collapse therapy and about ways and means of avoiding certain complications which may develop during the course of, or following, its use. A number of factors have served to dis-

credit pneumothorax therapy in recent years. Several investigators have written papers emphasizing the dangers of this form of therapy. They have stressed the pleural complications, such as broncho-pleural fistula and tuberculous empyema, which may occur during the course of pneumothorax therapy. Complications of this kind can be avoided almost completely. For example, judicious selection of cases, prompt discontinuance of pneumothorax therapy if adhesions cannot be safely and satisfactorily severed in the early stages of this form of therapy, and maintenance of a uniform degree of collapse of the diseased portion of lung throughout the course of therapy, can be the means of almost completely eliminating tuberculous empyema.

In recent years several investigators, notably Roger S. Mitchell among others, have drawn attention to the dangers attendant upon attempting to use pneumothorax therapy in patients who have a tuberculous infection of a main stem, or even a lesser, bronchus. The complications which are prone to follow induction of pneumothorax in patients with endobronchial as well as pulmonary tuberculosis can be avoided almost completely by making every effort to ascertain whether or not a patient has endobronchial disease prior to the institution of pneumothorax therapy and refraining from attempting to induce this form of collapse therapy in those who have significant endobronchial lesions. Examination of statistical reports reveals that the chances of securing favourable results with pneumothorax therapy in certain types of cases are remote. The cases in which a favourable outcome is hardly to be expected are those with far-advanced bilateral disease, especially those with fibroid lesions, thick walled cavities, emphysema and pleural synechiæ. Pneumothorax therapy failures can obviously be avoided in large measure by discouraging its use, or attempted use, in cases of this kind. Finally, renewed interest in pneumoperitoneum therapy, as Banyai, Howlett and several other investigators have shown, has been another means of discrediting the use of pneumothorax therapy in recent years.

Pneumothorax therapy can, it is recognized, be a dangerous rather than a safe and effective form of treatment. It can be a dangerous form of treatment when it is used in poorly selected cases, when its initial period of trial is needlessly prolonged, and when it is administered in a faulty manner. When used in carefully selected cases and properly administered pneumothorax therapy, in our opinion, is, in many respects, superior to pneumoperitoneum therapy. Unlike the latter, it is capable of rendering a selective collapse. With pneumothorax therapy it is possible to control the extent of pulmonary relaxation and collapse within fairly wide limits. Pneumoperitoneum therapy yields a measure of pulmonary collapse which is much less predictable both as regards selection and extent. It allows compression or relaxation of pulmonary tissue only indirectly, *i.e.*, by elevation of the leaf of the diaphragm on the affected side. It lacks the selective and concentric form of collapse which pneumothorax therapy usually yields. Over and above all of the foregoing, pneumoperitoneum therapy, because it has frequently to be accompanied by a phrenic nerve interruption, seems prone to lead to even a greater reduction in respiratory efficiency than long-continued carefully-administered pneumothorax therapy.

Pneumothorax therapy is superior to surgical forms of treatment in that it is a potentially reversible procedure. It can be used in certain selected patients in whom bed rest and chemotherapy do not appear to give promise of arresting the disease and in whom perhaps the extent and the nature of the tuberculous process, or the general condition of the patient, do not seem to warrant major surgical procedures.

The risks associated with the induction and maintenance of pneumothorax therapy, as the present study shows, can be almost completely eliminated by the consistent application of a few basic principles. When used in properly selected cases and carefully administered pneumothorax therapy, in our opinion ,is both a safe and an effective form of treatment.

SUMMARY

The late results in 106 (88%) of a group of 120 patients in whom pneumothorax therapy was discontinued in the five year period between 1941 and 1946, were favourable. All of these 106 patients were well and working two to seven years following re-expansion of their collapsed lung. Their disease was classified as inactive. Six of the 120 patients failed to make a satisfactory response to pneumothorax therapy. They were, in consequence, given other forms of

treatment. Eight of the group died prior to the end of the period of observation.

The dangers, and the complications, of pneumothorax therapy can be almost entirely eliminated by careful selection of patients and proper management.

Pneumothorax therapy, in our opinion, is a valuable form of treatment in selected cases of pulmonary tuberculosis.

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ECZEMA OF THE HANDS*

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ECZEMA INVOLVING mainly the hands is perhaps the most confusing syndrome encountered in the field of dermatology. Studies by Lane and his associates,[1] Stokes,[2] Sulzberger and Baer,[3] Flood and Perry[4] and Rowe,[5] emphasize both the complex interplay of etiologic factors and the considerable diversity of opinion regarding the classification and management.

This confusion is due partly to the relative uniformity of the clinical manifestations. Nummular eczema and chemical irritation are the only two entities in which the appearance is distinctive. In contact dermatitis, lesions on the palms and fingers are commonly vesicular, while those on the adjacent surfaces of the wrists may be exudative and eczematoid in character. Indolent, plaque-like lesions may occur in many unrelated syndromes. Contact dermatitis tends to affect the dorsa of the hands, and other entities, for example, dermatophytid, the palms, but this is not constant. Finally, the identification of historical data depends largely on the carefulness of the historian, and its interpretation varies tremendously according to his preconceived notions and prejudices. Accordingly, a re-evaluation of this controversial group of diseases is deemed important. The basis for the report is a study of 150 personally investigated cases, seen consecutively in private practice.

Classification of eczema.—In a previous survey of the pathogenesis of eczema,[6] no attempt was made to classify the resistant eczemas of the hands. During the present study, however, it was found that practically all cases could be separated with fair accuracy into definite categories. This classification is presented, in order of determined frequency of occurrence, in Table I.

The average age of the 150 patients studied was 36; for the most part the patients were in their thirties. The exceptions to this general rule were patients with neurodermatoses (41), food allergy (42), ichthyosis (47) and autoeczematization, when considered as a primary diagnosis, (54). There were 84 males and 66 females; however, if the contact group of dermatoses were eliminated, the sex incidence was approximately equal. There were more females in the food allergy and atopic groups. Ichthyotic dermatitis, precipitated frequently by the excessive use of soap, occurred mainly in females. There were 9 cases of so-called housewife's eczema. Contact sensitivity was noted chiefly in the male sex. The preponderance of males in the group with chemical dermatitis was only moderate.

TABLE I.

CLASSIFICATION OF ECZEMA OF HANDS

Contact dermatitis
a. Hypersensitivity
b. Chemical irritation
1. Housewife's eczema subgroup
Dermatophytid
a. Associated with severe focus of dermatophytosis
b. Precipitated by psychosomatic factors
c. Precipitated by penicillin
Food allergy
Localized atopic eczema
Vesicular neurodermatitis
Nummular eczema
Autoeczematization
Ichthyosis
Dermatitis medicamentosa
Miscellaneous (trauma, infection, endocrine, etc.)

The course of eczema of the hands, compiled according to primary diagnosis, is illustrated in Table II.

Because of unwise re-exposure to the offending allergen, more than one attack supervened in nearly 50% of the cases of contact dermatitis.

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Nevertheless, a favourable outcome was the rule. It follows that long persistence, after contacts have been scrupulously avoided, is indicative of another type of entity. The hands do not withstand chemical irritation well (average duration 11 months). Subsequent attacks are less frequent, yet the outcome is less favourable because of carelessness in subsequent contacts with various soaps and cleansers. The average duration is rather longer in the dermatophytid group, due largely to the characteristic periodicity of attacks. The ichthyotic syndrome occurred mainly in housewives who used excessive amounts of soap. Patients with vesicular neurodermatitis, nummular eczema, food allergy and atopic eczema had been troubled on an average of *5 or more years* when first seen. The majority had had three or more attacks. The results of treatment were poorer and many patients lapsed from observation.

The group was analyzed in an effort to identify the various factors influencing the development and course of the individual syndromes. The complex interplay of etiologic factors, arranged according to primary diagnosis, is shown in Table III.

It will be noted that in 5 of the entities listed, multiple causation was invariable and was notably common in food allergy and vesicular neurodermatitis. The incidence and number of multiple factors were high in both chemical dermatitis and contact hypersensitivity. Autoeczematization, of course, is a secondary phenomenon as it affects the hands. The usual story was that severe dermatitis with complicating elements was present formerly in other areas, notably the legs. The autoeczematization process then supervened and involved the hands in a vesicular fashion. After the involution of the primary focus, the eruption on the hands per-

TABLE II.

THE COURSE OF ECZEMA OF HANDS
(Classified by primary diagnosis)

Primary diagnosis	*No.*	*Average duration when first seen (in months)*	*No. attacks*			*Favourable outcome (percentage)*
			1	*2*	*3+*	
Chemical dermatitis	33	11.0	25	2	6	85
Dermatophytid	31	27.0	12	6	13	68
Contact sensitivity	27	19.0	15	6	6	95
Food allergy	14	67.0	3	3	8	71
Atopic eczema	12	90.0	5	1	6	57
Vesicular neurodermatitis	11	57.0	2	1	8	63
Nummular eczema	6	65.0	0	1	5	50
Autoeczematization	5	12.0	4	0	1	80
Ichthyosis	5	29.0	1	3	1	80
Dermatitis medicamentosa	3	1.3	3	0	0	100

TABLE III.

INTERPLAY OF ETIOLOGIC FACTORS
(by primary diagnoses)

Primary diagnosis	*No.*	*Number etiologic factors*			
		1	*2*	*3*	*4+*
Chemical dermatitis	33	10	10	9	4
Dermatophytid	31	0	10	11	0
Contact dermatitis	27	5	14	4	4
Food allergy	14	1	0	4	9
Atopic eczema	12	0	0	4	8
Vesicular neurodermatitis	11	3	0	5	3
Nummular eczema	6	0	3	2	1
Autoeczematization	5	0	0	4	1
Ichthyosis	5	0	2	2	1
Dermatitis medicamentosa	3	1	1	1	0

TABLE IV.

FREQUENCY OF SPECIFIC COMPLICATING FACTORS

Irritation from soap		103
Psychosomatic		56
Precipitating	23	
Influencing	33	
Infection		50
Occult	20	
Gross	21	
Focus (important in 7)	9	
Atopic Background		50
Family	35	
Hay fever, asthma, hives	21	
Previous eczema	12	
Treatment Aggravation		38
Chemical irritation	29	
Sensitivity	9	
Secondary autoeczematization		24
Heat		23
Hyperhidrosis		8
Food allergy		8
Secondary contact dermatitis		7
Vasomotor		6
Ichthyosis, cold, menses (each)		4
Endocrine		2

sisted, due to the coincidental presence of other etiologic agents. Three or more such factors were present in every case.

Secondary factors contributing to the development, relapse, or persistence of the eczematous eruption are listed in Table IV. Much of this data is self-explanatory. Irritation from soap was considered important in over two-thirds of the patients. Its aggravating effect was marked in chemical dermatitis (31 of 33) and in all cases of ichthyosis. In addition, its use produced irritation commonly in patients with dermatophytid, contact sensitivity, food allergy and atopic dermatitis. Psychosomatic factors were important in 56 cases and precipitated the dermatosis in 23. In addition to the primarily psychosomatic group, 1 patient with atopic dermatitis and 9 with dermatophytid were so influenced.

Most entities were influenced by stress; predisposing or aggravating effects were especially frequent in patients with food allergy, atopic dermatitis and dermatophytid. Evidence of infection was demonstrated in 50 cases. It occurred most commonly in patients with atopic dermatitis and nummular eczema. Its presence led to secondary autoeczematization in 7 patients. Of the 9 patients with infectious foci, the infection was considered of importance in 7, 5 of whom had nummular eczema. A familial or personal atopic background was present in one-third of the cases. Its occurrence in contact sensitivity or chemical irritation was relatively infrequent. One or more of the 3 categories of allergy occurred 24 times in the 12 patients with atopic dermatitis; an allergic background was common also in dermatophytid, neurodermatitis, food allergy and nummular eczema. Treatment aggravation developed in approximately 25% of the patients; chemical irritation was much more frequent than was sensitivity. As expected, treatment aggravations were seen mainly in patients with contact dermatoses (19 of 60), but were frequent also in dermatophytids (8 of 31), food allergy (7 of 14) and atopic dermatitis (5 of 12). Secondary autoeczematization, due to the severity of the primary dermatitis, supervened in 24 instances. It occurred in every patient who had had previous auto-eczematization, in 11 of the contact group, and was not uncommon in patients with atopic dermatitis and food allergy. Of the 23 eruptions aggravated by heat, dermatophytid was most commonly affected (10 of 31). Noticeable hyperhidrosis, despite its frequent mention in the literature, was relatively unimportant and occurred irregularly in several categories of disease. Food allergy developed as a secondary phenomenon mainly in patients with atopic dermatitis (4 of 12), nummular eczema, neurodermatitis and dermatophytid. Secondary contact dermatitis was surprisingly infrequent (7 cases), and supervened mainly in patients with dermatophytid or chemical dermatitis. It was not found in patients with primary contact sensitivity. None of the other complicating factors occurred in a significant distribution.

STUDY OF FACTORS RESPONSIBLE FOR CHRONICITY

The group was analyzed for the chief factor responsible for chronicity. In many instances, this was determined only after a period of observation and by a process of elimination. For example, if the eruption continued severely or relapsed some time after all chemical irritation had ceased, this factor could be safely eliminated. Table V delineates the main factors responsible for chronicity, classified according to their duration when first seen, the numbers with specific duration in months, and the percentage with favourable outcome.

The chart indicates clearly that prolonged duration when first seen occurs mainly in 4 groups: *food allergy* (62 months), *infection* (58 months), *psychosomatic* and *atopic irritability* (each 53 months). As expected, chemical irritation headed the list; when this was caused by soap the outcome was less favourable, due to the ubiquity of its presence. Surprisingly, psychosomatic factors were second in importance. Their importance was evaluated by prolonged observation, detailed historical evidence, and correlation with specific exacerbations or relapses. Despite the increased time and effort employed in their management, a favourable outcome was obtained in only 58%. Similar results were obtained when atopic irritability was the main continuing factor (60%). In the food allergy group, the outcome was slightly more favourable (67%). Treatment was only moderately effective in the dermatophytid group due to the persistence of occult foci of infection, recurring psychic stress and unavoidable exposure to heat.

Lane and his associates[1] stressed secondary infection as a cause of chronicity of hand eczemas. Pathogenic staphylococci and at times streptococci, were identified frequently by

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culture. Török[7] has pointed out that secondary pyococcic invasion of a dermatitis may result in an increase in the degree of inflammation, vesiculation and exudation. In the present group, gross local infection responded promptly to treatment. However, occult infection, while easily identified, was of demonstrable importance as a cause of chronicity only in patients with nummular eczema. The relative sterilization of lesions by antibacterial therapy did not significantly affect the chronicity of the eruptions. The low percentage of cures in nummular eczema was considered to be due in part to the non-eradicable nature of some of the foci (bronchiectasis, chronic colitis, etc.).

Sulzberger and Baer[3] have discussed the relation of hand eczemas to dyshidrosis and disturbances in sweating. They suggest that occlusion of the sweat ducts, as it occurs in prickly heat and in miliaria crystallina, may be of importance in many of the hand eczemas, such as cheiropompholyx and dyshidrosis of the older literature. However, it is not clear how such lesions could occur on a basis of sweat retention *sui generis*. Rothman[8] denies the existence of such a syndrome. It is possible, of course, that sweat retention prolongs the duration of these eruptions. Nevertheless, severe hyperhidrosis was exceptional in the present group.

TABLE V.

STUDY OF FACTORS RESPONSIBLE FOR CHRONICITY

Main factor responsible for chronicity	*No.*	*Duration (in months)*						*Favourable outcome (percentage)*
		When first seen	*0 - 3*	*4 - 12*	*13 - 24*	*25 - 60*	*60+*	
Chemical irritation	41	11	18	15	5	2	1	78
A. Soap	16	9	6	6	3	1	–	63
B. Other chemicals	25	16	12	9	2	1	1	89
Psychosomatic	29	53	4	2	7	7	9	58
Contact sensitivity	24	13	13	4	4	1	2	95
Dermatophytid	17	33	4	4	5	1	3	71
Food allergy	15	62	—	4	4	2	5	67
Atopic irritability	10	53	2	1	—	1	6	60
Infection	7	58	—	1	2	2	2	67
A. Occult	1	48	—	—	—	1	–	
B. Gross	1	20	—	—	1	—	–	
C. Focal	5	68	—	1	1	1	2	
Autoeczematization	6	9	3	1	1	1	–	83
Endocrine	1	84	—	—	—	—	1	100

INDIVIDUAL REACTION TYPES

Contact group.—As a rule, contact sensitivity and chemical irritation are readily identifiable and their cure is easily obtained. Clinical features vary, depending upon the type and degree of sensitization, and on the degree of chemical irritation produced. In consequence, dry and crusted eczematoid lesions may occur singly or be complicated by vesiculo-bullous lesions, variable amounts of swelling, and/or secondary infection. The location is often confined sharply to the area of contact; when the contacts occur diffusely over the hands, the palms may be spared, while the eruption appears mainly on the dorsum of the hands and on the fingers. Eczematoid eruptions of the dorsa may coexist with vesicular outbreaks on the fingers. As a rule, the interplay of etiologic factors in contact dermatitis is not too complicated, and cure is easily obtained. Aggravation by treatment and by soap are common, but usually can be avoided, while the frequent development of secondary infection is not of severe prognostic import. Secondary autoeczematization, also common, can be controlled readily by a proper therapeutic regimen, although the duration of treatment is necessarily prolonged. Secondary continuing factors such as an atopic background, food allergy, or psychosomatic aggravation are relatively unimportant. At times, secondary complications may result in great chronicity.

In the present material, the initial diagnosis of contact dermatitis was frequently not substantiated by prolonged observation. Atopic dermatitis, food allergy, vesicular neurodermatitis, or even menstrual dermatitis may masquerade under the guise of a contact eczema.

Dermatophytid.—Dermatophytid occurred in some 20% of the cases. This disorder is not distinctive in its appearance and may be

mimicked by vesicular neurodermatitis, food allergy, autoeczematization and dermatitis medicamentosa. Typically, vesicular lesions develop commonly over the fingers and on the palms and an active focus of dermatophytosis is present on the feet. Not all vesicular eruptions occurring on the hands coincidentally with dermatophytosis of the feet are dermatophytids. Subsequent recurrence after removal of the active focus will indicate the necessity for further study. Such recurrences may be produced by superimposed food allergy, penicillin or psychic stress. A delayed positive trichophytin reaction is of suggestive but not conclusive significance. The development of dermatophytid was potentiated by heat in 30% of the cases. Subsequent aggravation by soap occurred in 66%, while treatment aggravation and secondary contact dermatitis were identified in 35%. When the use of soap was continued, the "id" reaction was more chronic in nature. Secondary contact dermatitis supervened in 10% and when severe was followed by subsequent autoeczematization. Infection developed in 30%, but did not greatly influence chronicity. It is of interest that 30% of the dermatophytids were precipitated by psychic stress; continuing psychic factors were important in relapse and chronicity in 26%. Dermatophytids develop commonly at irregular and usually prolonged intervals. Chronicity and frequent relapses are often due to persistent psychosomatic factors; chronicity is a feature in atopic individuals (30% of the present group).

Atopic eczema.—The most interesting and perplexing syndrome encountered was localized atopic eczema. This entity, while recognized by some dermatologists, has received but scant attention in the pertinent literature. Localized plaquey lesions, however, are well-recognized as a subsequent episode in patients with a past or familial history of atopy. These eruptions are by no means confined to the hands; an ante-cubital or popliteal space may be involved, or the eruption may be confined to a leg or foot. These plaques are commonly the site of intense itching and are extremely resistant to treatment. Some authorities state that lichen Vidal is a form of localized atopic dermatitis, and while this concept is not personally accepted, the confusion in nomenclature is readily understandable.

Localized atopic eczema is frequently lichenified and may resemble a patch of lichen Vidal. As a rule, however, there is a certain amount of eczematization, although frank vesiculation is rarely, if ever, observed in the uncomplicated forms. Lesions may occur on any portion of the hands although they are noted most commonly on the fingers and on the dorsal surfaces. Frequently, an occasional plaque is or has been present on a forearm or leg. Unless secondary contact or other factors have supervened, a localized patchy distribution is the rule. The course is often bizarre, and contact dermatitis is frequently suspected by both physician and patient. More prolonged observation may further confuse the issue and first one and then another cause may be suspected.

Atopic irritability serves frequently as a baseline for the intervention of superimposed etiologic factors, which change greatly the appearance of the eruption. A multiplicity of such factors is the rule, 4 of the patients having 3 and 8 having 4 or more. Attacks are apt to be multiple, or if single, persistence is the rule. A careful history reveals previous familial or personal manifestations of atopy. Of the 12 diagnosed as atopic dermatitis, a family history of atopy was present in 8, a personal history in 6, while previous eczema involving other areas had occurred in 9. Treatment aggravation is not uncommon and superimposed aggravation from soap is generally present. Evidence of secondary infection occurs in about one-third of the cases and food allergy is frequently suspected. In the present series, considerable difficulty was encountered in separating the localized atopic group from those due primarily to food allergy; in the latter syndrome, an atopic background was frequently present. Of the minor aggravating factors, excessive heat and humidity were the most important.

When uncomplicated, dry, frequently lichenified plaques are the rule in localized atopic eczema. Secondary contact factors are apt to produce more eczematoid lesions with vesiculation and crusting. If vesiculation is predominant on the plaquey base, food allergy or psychosomatic factors should be suspected. Unilateral spread and severe exudation suggests an infectious component.

Food allergy.—Food allergy was the primary diagnosis in 14 cases. Of these, the diagnosis was substantiated in 8 by elimination diets. Primary requisites were: (1) the eruption must subside permanently after removal of the offending allergen and (2) it must recur promptly following

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reingestion of the suspected food. The various methods of dietary investigation have been outlined clearly by Flood and Perry.[4] In the present series, the method consisted of the use of a baseline, simple non-allergic diet. If no new lesions appeared while on this diet, successive foods were added singly at 3 day intervals until testing was completed. A positive food test was characterized by the development of new vesicular lesions within a 24-hour period. In another 6 cases, food allergy was suspected. Flare-ups had been noted following the ingestion of certain foods and improvement or cure had resulted from their elimination. Because of the cumbersome investigative procedure, some patients lapsed from observation. Food allergy occurred as a secondary complication in 8 cases; the diagnosis was proved in 6 of these by food testing.

Hand eruptions produced by foods are not clinically distinctive; they may resemble those of dermatophytid, vesicular neurodermatitis and bizarre types of plaquey, eczematoid, contact dermatitis. Of the 22 cases, 8 were frankly vesicular, 9 were vesiculo-plaquey and 5 were plaquey-eczematoid in nature. The latter characteristic (7 instances) was produced by treatment aggravation or sensitivity (much treatment had been given because of associated chronicity). Aggravation by soap supervened in 11 of the 14 cases of primary food allergy, while gross infection was present in 4; these factors also influenced the clinical appearance. The lesions in 18 of the 22 cases were confined to the hands, in 1, the hands and feet, and in 3, were scattered over the body. In the latter circumstances, however, lesions had developed primarily on the hands. The course of the eruption varied, depending upon the frequency and amount of ingestion of the allergenic food. If the foods were eaten frequently, but in variable amounts, the development of vesicular lesions was a continuous one, complicated by irregular exacerbations; this occurred in 10 instances. Irregular exacerbations occurred in 9 cases and occasional attacks in 3. In these situations either the allergen was eaten irregularly or occasionally, or psychosomatic factors acted as a trigger mechanism. Psychic stress was an influencing or precipitating factor in 64% of the 22 cases; its variable presence complicated greatly the course of the eruption and made separation of the etiologic components difficult.

A complicated interplay is often present between food allergy, psychic stress, and underlying atopic factors. A familial history of allergy was found in 10 of the 22 cases, hay fever, asthma or urticaria had been present in 9, and previous atopic eczema in 4. Nine patients were sensitive to 1 food, 3 to 2, and 4 to 3 or more. Ingestion tests were completed and found positive in 14 of the 22 cases. A further analysis revealed reactions to milk in 5, wheat 4, eggs 3, pork 3, tuna fish 2, coffee 2, and asparagus, peas, apples, tomato, chicken, nuts and grapefruit in 1. Two patients were sensitive to both wheat and eggs. Of the 5 patients sensitive to milk, vesiculation was continuous with irregular exacerbations.

The investigation of possible food allergy is fraught with difficulty and pitfalls. As a rule, food allergy should be suspected in chronic vesicular eruptions involving the hands, especially in atopic individuals and in those with unexplained vesicular relapse or exacerbations after contact factors have been eliminated. Irregular flare-ups without obvious cause may be due to foods. A mild, active, unrelated dermatophytosis may be confusing, but persistence after cure of the fungous disease may clarify the issue.

Vesicular neurodermatitis.—The importance of psychosomatic factors on the development and course of the various types of hand eczemas has already been discussed; dominant abnormalities in the life situation were the main cause for chronicity in 20% of the 150 cases. Moreover, the analysis of the syndromes by primary diagnosis revealed the presence of psychic stress in 56 cases; in 23 of these it was the initial precipitating agent. Further analysis of the data disclosed 11 patients with distinctive type of neurodermatitis, described in a previous communication.[9] This syndrome consisted of vesicular lesions on a non-inflammatory base, located anywhere over the hands, but most commonly on the fingers and palms. An atopic background was obtained in 5, but in no instance was an atopic type of dermatitis present. When plaquey or lichenified elements could be identified, other causative agents were invariably present. Evidence of dermatophytosis was not found; in 2 cases, however, a previous dermatophytosis and dermatophytid had occurred, and it is possible that this situation had prepared the ground for the later psychosomatic reaction. Heat potenti-

ated the reaction in 3 cases, the menses in 1, while food allergy was suspected, but not proved, in another 2. In about one-third of the patients, the eruptions were aggravated either by soap or by treatment and 2 developed gross secondary infection. Psychosomatic factors operated commonly over a considerable period of time, but in all instances the dominant situation had become intolerable and acute nervous stress was present. The results of treatment were only moderately good, due to longstanding situational difficulties, and 3 or more relapses were the rule, (72%).

Infectious dermatoses. — A frank infectious dermatitis was present in but 1 case. It was due to a combined staphylococcic and streptococcic infection and consisted of peripherally extending pustular and crusted plaques. Cure was finally accomplished after prolonged therapy with aureomycin. Secondary infection was found to contribute to chronicity mainly in nummular eczema. This entity is characterized by sharply marginated and intensely pruritic, eczematoid plaques. It may be localized to the hands (as in the 6 reported cases), or it may occur more diffusely over the distal extremities. Pathogenic staphylococci, and at times streptococci, may be identified and a focus of infection is almost invariably present. However, anti-infectious regimens are not uniformly successful, suggesting that other etiologic factors such as ichthyosis or vitamin A deficiency are present. As a rule, the eruption improves on an anti-infectious regimen; it may be arrested temporarily by the systemic administration of sulfonamides, penicillin, or other antibiotics, and it may flare up on removal of an active focus of infection. In the present group of 6 cases, an active focus of infection was found in 5 and suspected in 1, while occult local infection was demonstrated in 2. It appeared that the eruption was aggravated but not primarily influenced by psychosomatic factors. Aggravation by treatment or by soaps was found in 66%. An atopic background was found in 3 of the 6 cases. Long duration was the rule and 5 of the 6 patients had more than 3 attacks. Multiple etiologic factors were invariably present, but their influence was not considered a major one in the persistence of the eruption. None of the patients was cured, although marked improvement was obtained in 50%.

GENERAL COMMENT

A survey of the previously described complicating factors and of the various elements responsible for chronicity emphasizes the need for careful investigation and management. Cotton and rubber gloves should be worn when contact factors are present. Soap substitutes should be used and contact with soaps avoided. Initial local therapy should be mild with bland compresses, supplemented frequently by systemic antibiotics in the presence of acute exudation with secondary infection. In the acute phase of the eruption, x-ray therapy is contraindicated; its employment may result in the development of secondary autoeczematization. Subsequent stimulating therapy, such as tar, should be initiated with caution, especially if an infectious component is suspected. The various causative factors should be identified and eliminated. When eczematous lesions are chronic when first seen, and especially when contact factors can be or have been eliminated, a thorough discussion of the problem with the patient is imperative. If he understands the pitfalls which the therapeutist may encounter, lapse from observation will be less frequent. A frank statement as to prognosis should be made so that the patient understands that cure can be obtained only if full co-operation is given.

SUMMARY

One hundred and fifty patients with "eczema of the hands" have been studied and their salient features analyzed. Emphasis is placed on the complex interplay of etiologic factors which may be present in any given case. A rational therapeutic outline is presented.

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Five premature infants thought to be developing retrolental fibroplasia were treated with ACTH. The fibroplasia progressed unabated, in the 4 surviving infants, to cicatrix formation behind the lens, thus ACTH was an ineffective agent in its treatment.—Lanman, J. T. *et al.*, *Pediatrics*, 9: 27, 1952.

PAN-HYPOPITUITARISM IN A MALE FOLLOWING PITUITARY APOPLEXY*

(Treated with ACTH and Cortisone)

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THE CONCEPT of pan-hypopituitarism is a very interesting example of the way in which a clinical picture is modified before being reduced to a "typical" description in a medical textbook; consequently a word or two concerning the history of its development may not be out of place.

Simmonds in 1914[26] originally described a 46-year old woman, admitted to hospital in coma, of two days' duration, and dying the day after admission, who appeared very thin and looked much older than the stated age. Her history revealed an episode of severe sepsis at age 36, immediately after the delivery of her last child, following which her husband stated that her menstrual periods stopped, she remained very weak, noticed dizziness, often fainted, and grew thin and old very quickly. At autopsy the significant findings included, "a few little cysts containing colloid fluid" in the pars intermedia and almost complete destruction of the anterior lobe of the pituitary, as well as marked atrophy of the viscera, in general. The entire pituitary specimen weighed only 300 mgm. In the conclusion of his paper Simmonds mentioned again occurrence of amenorrhœa, attacks of unconsciousness, anæmia, and early senility, and correlated the clinical and pathological findings in his case.

As Simmonds' paper became known more widely in German medical circles, the diagnosis of Simmonds' disease was made more and more frequently, with a great deal of emphasis being placed on the physical finding of extreme emaciation. It is interesting to find that 20 years later, the differential diagnosis of anorexia nervosa was unknown in German medicine, although English medicine was enriched by Sir William Gull's[12, 13] contributions to the subject in the last third of the nineteenth century.

It was not until 1931, that the first proved cases of Simmonds' disease were described on this continent, by Farquharson and Graham,[7] of Toronto. Their second case was extremely interesting, presenting, as a first sign of pituitary disorder, a rapid gain in weight, associated with a loss of sexual desire and impotency. Obesity persisted for approximately 18 months, when, following an upper respiratory infection, "he failed to regain his former sense of well-being", and a drop in weight of 63 lb. occurred in approximately 6 months. Autopsy revealed syphilitic fibrosis of the anterior lobe of the pituitary gland.

Sheehan's papers[18 to 22, 24, 25] bring to the subject a much broader outlook on hypopituitarism than had been possible previously within the narrow boundaries of Simmonds' original work. He broadened the concept of the disease to include greater and lesser degrees of hypopituitarism, and placed Simmonds' disease in its proper perspective as an example of extreme dysfunction of the anterior lobe of the pituitary. At the same time he wisely recalled that Simmonds himself demonstrated a severe, long-standing injury to the anterior lobe of the pituitary, and suggested that Simmonds' disease should only be diagnosed if such a lesion could be established. He also pointed out that weight loss was not at all essential to the diagnosis of this disease. Sheehan established post partum necrosis of the anterior lobe of the pituitary gland as the commonest cause of hypopituitarism, estimating that there would likely be two severe cases and seven lesser cases of hypopituitarism, due to this cause, per 10,000 of the population (United Kingdom). He listed tumour and granulomatous lesions as other less common etiological factors.

A. W. Spence,[23] discussing Simmonds' disease gives post partum necrosis of the anterior pituitary as the commonest cause of complete and incomplete forms of the syndrome. Apart from this cause, he states, "the disease is extremely rare, and hence its diagnosis in men, and in women who have not had a complicated delivery, should be made with caution". The following case history of Simmonds' disease in a male is felt to be interesting because of its unusual etiology.

CASE REPORT

This forty-four year old white male was admitted to Victoria Hospital, London, Ont. on March 12, 1951, with the chief complaints of generalized weakness, pain and stiffness of his extremities, loss of appetite, loss of weight, and impotency, all of approximately fourteen months' duration. He was in his usual state of health until

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Christmas of 1949 when he experienced a severe "flu-like" illness. After this illness he continued to feel weak and lost 57 pounds in weight in the following fourteen months. His appetite remained very poor and eating was often associated with nausea and vomiting. Pain and stiffness was noted in the knees and the left shoulder, and he found walking increasingly difficult due to this stiffness in his lower extremities.

Past history revealed that in 1936 he suffered an episode which was characterized by sudden, severe, frontal headache associated with epistaxis and followed by a period of unconsciousness lasting for approximately three days. With return of consciousness he was able to distinguish only light and gross objects, and noted weakness of the left arm and left leg. This weakness improved gradually and after a period of six months full motor function returned, but his impaired vision has remained unchanged.

In the following year the patient had anorexia and lost 35 pounds in weight, but during that period he was very despondent because of his loss of vision and the unexpected death of his wife. Subsequently he regained his lost weight and maintained normal weight until 14 months prior to admission, at which time the difficulties outlined above commenced.

Physical examination revealed a pale white male in no acute distress with dull expressionless facies. His skin was smooth and soft and the absence of axillary, facial, and chest hair was noted. There were no abnormal physical findings in examination of his cardiovascular and pulmonary systems and similarly no abnormalities in the abdominal examination. The blood pressure was 120/80.

The extremities revealed full range of movement and no deformity of the joints. His musculature appeared generally atrophied and exhibited slight spastic rigidity and definite weakness. The gait was shuffling and stiff in character with the back held partially flexed.

The pupils did not contract to ordinary lamp-light but were seen to do so slightly by means of a slit-lamp; they reacted promptly, however, to accommodation. The optic discs were both sharply outlined and yellowish-white in colour. The visual field of the right eye showed concentric narrowing to approximately 10 degrees while the field of the left eye could not be tested due to gross loss of vision on that side. The examination of the central nervous system was otherwise within normal limits.

The electrocardiogram was normal except for borderline low voltage in the precordial leads.

Radiological examination of the knees demonstrated normal bony architecture on the left, but on the right a slight irregularity of the medial tibial plateau was seen. Skull radiographs revealed an enlarged pituitary fossa, measuring 12 mm. in depth and 18 mm. in length, with erosion of the left anterior clinoid process (Fig. 1). These observations suggested a slow pressure atrophy from a mass within the pituitary fossa. An air encephalogram demonstrated slight cerebral atrophy but no extension of the mass within the sella turcica above the diaphragma sellæ (Fig. 2).

Laboratory examinations carried out showed a hæmoglobin of 84% (Sahli) with a red cell count of 4,770,000. The erythrocyte sedimentation rate (Westergren) was 27 mm. in one hour. The blood Wassermann test showed no reaction. The cerebro-spinal fluid exhibited normal dynamics with a cell count of 2, and normal values for chlorides and sugar, as well as a negative Wassermann reaction. The cerebro-spinal fluid protein, however, was 140 mgm. %.

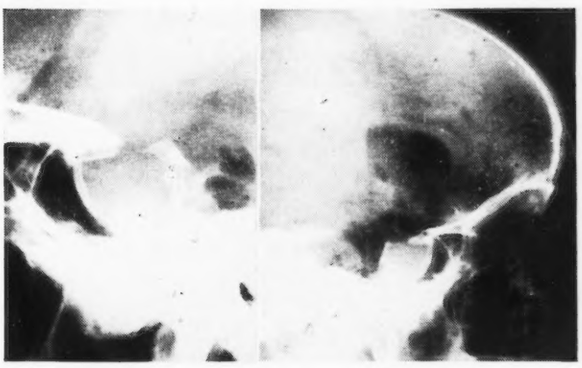

Fig. 1

Fig. 2

Fig. 1.—This x-ray demonstrates the enlarged sella turcica. The transverse measurement is 18 mm. and it measures 12 mm. in depth. Fig. 2.—In this air encephalogram the air can be seen surrounding the sella turcica and there is no extension of the mass within the sella turcica above the diaphragma sellæ.

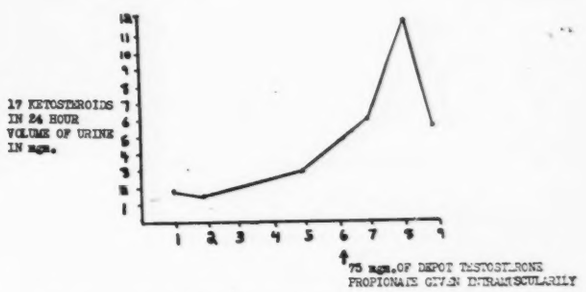

Fig. 3.—The effect of one dose of depot testosterone propionate on the excretion of urinary 17 ketosteroids.

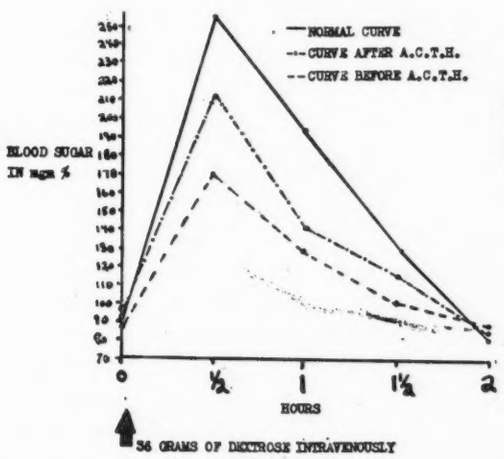

Fig. 4

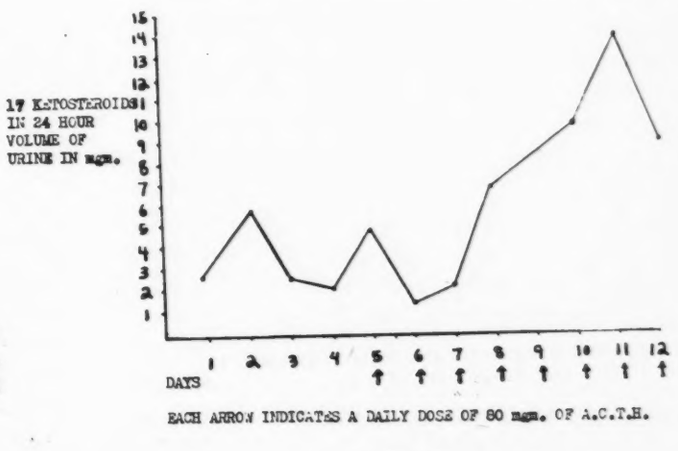

Fig. 5

Fig. 4.—The effect of thirteen days of ACTH therapy on the intravenous glucose tolerance curve. Fig. 5.—The effect of 80 mgm. daily of ACTH on the excretion of urinary 17 ketosteroids.

A complete urinalysis was normal. Total 17 ketosteroid excretion in 24 hour volume of urine was 1.9 mgm. %. An ACTH[8] test revealed only a 10% drop in the circulating eosinophiles. The basal metabolic rate was −49%. The total plasma proteins were 5.7 gm. with an A:G ratio of 1.4:1. The fasting blood sugar was 101 mgm. %. A blood uric acid of 2.2 mgm. % and a blood cholesterol of 187 mgm. % were obtained, as well as a serum sodium of 315 mgm. % and a serum potassium of 21 mgm. %. The blood non-protein nitrogen was 23 mgm. %.

The therapy first employed in this patient was one dose of 75 mgm. of a depot preparation of testosterone propionate. The effects of this on the 24 hour urinary excretion of 17 ketosteroids is seen in Fig. 3. Clinically, the patient felt better, seemed more cheerful and moved about the ward in a more lively manner. The therapy next employed was ACTH given intramuscularly in 6-hourly doses to a total of 80 mgm. daily, and carried on for twelve days at which time the dosage was lowered to 60 mgm. daily, for two days, then completed with 10 mgm. daily for two days, making a total of 1,100 mgm. of ACTH over a period of 18 days. The effect of this therapy on glucose tolerance and 17 ketosteroid excretion is seen in Figs. 4 and 5 respectively. This patient's B.M.R. after the administration of ACTH for nine days rose to −29%. After completion of the course of ACTH the patient received no therapy for four days. At that time the oral administration of 50 mgm. of cortisone daily was begun, as well as 50 mgm. of depot testosterone propionate injected intramuscularly once weekly. The patient improved considerably on this therapy. He regained his strength, felt generally much improved and was able to be discharged from hospital, June 8, 1951. He returned to work, was able to carry on normally and even went dancing on several occasions. When seen on August 16, he continued to look and feel well, stated he found it necessary to shave every other day, and had noted return of his libido. The reappearance of axillary and chest hair was noted. The thyroid gland at this time was found to have absorbed in 24 hours 25% of an ingested dose of 10 microcuries of radioactive iodine. This is accepted as evidence of normal thyroid activity in our isotope laboratory. The dosage of oral cortisone was reduced to 25 mgm. daily, while he continued with weekly injections of testosterone propionate. In addition, he was started on thyroid grains 1/8 daily.

DISCUSSION

The findings in this case, of a 57 lb. weight loss, loss of sexual power, marked asthenia, low basal metabolic rate, and the radiological demonstration of marked distortion of the pituitary fossa, satisfy all the criteria for the diagnosis of pan-hypopituitarism and, indeed, for the diagnosis of Simmonds' disease. The radiological evidence of an enlarged sella turcica with minimal expansion of the pituitary lesion beyond the confines of the sella as judged by air encephalography (Fig. 2), the absence of clinical signs of acromegaly, basophilism, or diabetes insipidus, and finally, the length of the clinical history, would seem to indicate the presence of a slow-growing, non-functioning, space-occupying lesion, localized to the area of the anterior lobe of the pituitary. With no clinical evidence suggesting that such a lesion might be granulomatous in nature, the diagnosis of chromophobe adenoma would appear justifiable.

The history of a previous cerebro-vascular episode characterized by severe headache and unconsciousness and followed by hemiparesis and gross visual disturbance in a patient who, 14 years later, developed pan-hypopituitarism and was found to have a localized expanding lesion in the region of the anterior lobe of the pituitary, can be explained by postulating an acute vascular disturbance in a chromophobe adenoma. This concept has been suggested in recent reports,[1, 9] where exactly this train of events has been shown to occur, on the basis of clinical and pathological evidence. Brougham, Heusner, and Adams,[1] state:

> "Hæmorrhage into and/or extensive necrosis of the adenoma was responsible for the sudden onset of a fairly uniform syndrome consisting of drowsiness, stupor or coma, headache and stiff neck, ocular palsies and sometimes, amblyopia or hemiparesis."

Their differential diagnosis included crises of adrenal insufficiency, a temporal pressure cone, rupture of a berry aneurysm, and convulsive states. Such a diagnosis, in this case, however, is a presumptive one only, in view of the lack of autopsy evidence. A relatively long lapse of time between the occurrence of the destructive lesion of the pituitary and the endocrinologic effects resulting from this destruction, is by no means unknown. Sheehan reported this in one of his papers when he observed:

> "The course of the syndrome is very variable. General symptoms do not begin suddenly and completely when the pituitary becomes necrotic. In some cases the symptoms develop gradually and progressively, in others they begin rather suddenly, after a latent period which is symptomless apart from amenorrhœa and which may last for many years."

The question of obesity versus weight loss, when due to pituitary disorders is an interesting one, as both effects have been ascribed in the literature to impairment of function of the anterior lobe of the pituitary.[11, 33] In this connection it is interesting to recall Farquharson and Graham's[7] second case, quoted above, which did show first obesity, and then marked weight loss. Experimental evidence[29, 30, 31] shows clearly that involvement of the hypothalamus as well as of the pituitary occurs in any case of pituitary disease which develops marked obesity. Experimental ablation of the hypophysis, on the other hand, with no damage to surrounding structures, produces an effect in animals which simulates very closely Simmonds' disease in the human.

The signs, symptomatology, and laboratory findings in hypopituitarism are fully explainable on the basis of the known multi-glandular atrophy which occurs in this disease, secondary to absence of the trophic hormones elaborated by the anterior lobe of the pituitary. The lack of a practical trophic hormone, as replacement therapy, in the past, has resulted in uniformly disappointing results in the treatment of this condition. With the advent of ACTH and cortisone, however, a rational approach to therapy has become possible. Forsham, Thorn *et al.*,[8] have demonstrated in their classical papers the marked adrenotrophic action of ACTH, and the effect of ACTH in our patient tends to confirm their results, as is shown by increased excretion of 17 ketosteroids, as well as the clinical return of libido, growth of hair, and a marked decrease in asthenia. The alteration in the intravenous glucose tolerance curve after ACTH therapy suggests the return of a more normal carbohydrate metabolism. The normal thyroid function in this patient, estimated by isotope studies, is impossible to assess in terms of the influence of ACTH on the thyroid gland, even though such therapy was discontinued over one month before the estimation was done. It is unfortunate that the lack of isotopes previous to beginning ACTH therapy, prevented estimations being done at that time. The apparent rise in the basal metabolism as evidenced in B.M.R. readings recorded in this case, before and after treatment with ACTH is explainable in several different ways; one is the ever-present possibility of the known variation between estimations on the same patient. This is felt to be unlikely here because of the marked clinical improvement which occurred concomitantly with the considerable difference in the two readings. A second possibility is the influence of ACTH, or some contaminant, on the thyroid gland. We can only conjecture regarding such an influence here. The third possibility is the general increase in metabolism occurring in a more active, vigorous man. While it was felt that from a physiological standpoint ACTH was the ideal therapy for the patient, convenience and practicability demanded maintenance with oral cortisone plus testosterone propionate and thyroid extract.

In regard to a possible surgical approach to this patient's problem one can only quote Jefferson's[14] opinion. He feels that operation on patients with long-standing pituitary tumours, poor vision and advanced optic atrophy is dangerous, "for improvement is unlikely, and there is a strong prospect of fatality."

Summary and Conclusion

1. The development of the concept of pan-hypopituitarism is discussed.

2. A case of pan-hypopituitarism is presented, the etiology of which is felt to be a chromophobe adenoma with a secondary episode of "pituitary apoplexy".

3. The effect of ACTH, cortisone, and testosterone propionate therapy is discussed.

4. Surgical intervention is felt not to be warranted in this case.

We acknowledge gratefully the encouragement and direction given us by Professor F. S. Brien, Dr. H. T. McAlpine and Dr. A. S. Douglas, on whose services this patient was studied.

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Science lives only in quiet places, and with odd people, mostly poor.—Ruskin.

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HEXACHLOROPHENE (G11) IN THE SURGICAL SCRUB*

A Brushless Surgical Wash

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HEXACHLOROPHENE† is a chlorinated phenol that has been found useful in the surgical scrub and in the preoperative preparation of the patient's skin. Phenol derivatives have been used in soap before and they have been found to be poor germicides.[18] The greater efficiency of hexachlorophene is probably due to the two free hydroxy groups in its nuclear structure, for the other phenols that have been used in soap have only one free hydroxy group. This hydroxy group combines with the alkali formed during the use of any soap resulting in a relatively inactive germicidal salt. With hexachlorophene this combination also occurs but apparently only one hydroxy group is used and the other remains free and effective. Another advantage of hexachlorophene is its prolonged action through retention by the skin for it can be recovered from the skin more than 48 hours after use.[4] This lasting effect of hexachlorophene permits those who use it regularly to reduce greatly the total time devoted to scrubbing. Some workers claim that if hexachlorophene is to shorten the time for the preparation of the surgeon's hands, it must be present in all soap whenever used and not just for preoperative scrubbing.[19] Others,[16] however, feel that this is not necessarily so and the present study supports this view.

STUDIES

(a) *In the laboratory.*—Four washing agents were studied: (1) green soap; (2) green soap with 3% hexachlorophene; (3) Phisoderm‡; (4) Phisoderm with 3% hexachlorophene. Four members of the laboratory staff used one of the agents mentioned above during the experimental washing periods and not at any other time. Prior to the experimental washing period each individual's hands were washed with cake soap and water for two minutes to reduce the variable of the transient bacteria. Each subject next vigorously rubbed the hands in two litres of sterile, buffered, distilled water and specimens of the water were cultured to determine the total number of bacteria that had been removed. A two minute wash with the particular agent was then carried out without the aid of a brush. The hands were dried on sterile towels and sterile gloves were worn in the laboratory for one hour. The gloves were removed and both hands were rinsed to the wrist creases as before in two litres of sterile, buffered, distilled water. The total number of bacteria present in the water was determined. Each individual used the same agent for the two minute experimental washing period for three consecutive days. On the first two of these days the number of bacteria was determined. After a break of four days to allow some recovery of the

TABLE I.

The effect of washing for two minutes each day with various agents on the number of bacteria recovered from the hands in rinse basins. The washing agent was used by the same individual on three consecutive days, was not used for the next four days and then was used again for three days.

		Number of colonies per 1 c.c. of rinse water (1,000 c.c.)						
Subject	*Days washing agent used*	*1*	*2*	*3*		*4*	*5*	*6*
1.	Green soap							
	(a) Preglove rinse*	550	3,000	Not	No	2,270	2,220	1,260
	(b) Postglove rinse	110	1,010	tested	special	460	1,160	590
2.	Green soap and 3% hexachlorophene				agent or			
	(a) Preglove rinse*	3,100	4,800		washing	2,900	100	80
	(b) Postglove rinse	250	2,600		method	240	30	20
3.	Phisoderm				used			
	(a) Preglove rinse*	900	970		for	1,410	1,240	1,730
	(b) Postglove rinse	160	580		4 days	490	330	550
4.	Phisoderm and 3% hexachlorophene							
	(a) Preglove rinse*	1,840	1,200			810	10	20
	(b) Postglove rinse	90	460			20	10	20

* A two minute wash with cake soap preceded the preglove rinse.

*From the Department of Surgery and the Department of Bacteriology, Toronto General Hospital.
†Sindar Corporation trade name is Compound G11.
‡Winthrop Chemical Company.

resident flora and also to determine the residual effect of hexachlorophene, the experimental washing again was repeated daily for three more days.

The results of this experiment are shown in Table I. It will be observed that the inclusion of 3% hexachlorophene in the washing agent resulted in much lower bacterial counts per c.c. in both the preglove and the postglove rinse-water on days 5 and 6. These results indicate that a single daily two minute wash with hexachlorophene has to be used for several days before any marked effect is obtained on the total number of bacteria recoverable from the hands prior to or after the wearing of rubber gloves. That this effect was obtained on the second day of use after an interval of four days without hexachlorophene suggests that some of the agent had been retained on the skin.

(b) *In the surgical scrub.* – Members of a neurosurgical team used one of the washing agents mentioned above. Each subject rinsed the hands in sterile, buffered, distilled water for two minutes and samples of the water were used for colony counts. They then scrubbed for a specified time with their respective agent using a brush. No alcohol rinse was used. After the operation the inside of the gloves and the hands were rinsed in another basin containing sterile water and colony counts were done. The scrubbing times used were three minutes for hexachlorophene in phisoderm or green soap; and a routine six minute surgical scrub for phisoderm and green soap alone. The experiment was repeated, as far as possible, every day for a week. There were, however, several gaps in this series and the development of dermatitis necessitated excluding one of the subjects before the series was completed.

The findings shown in Table II indicate that Phisoderm and 3% hexachlorophene used for three minutes are at least as effective in degerming the hands as a six minute scrub with Phisoderm alone, and superior to green soap.

A very significant complication arose with the surgeon who was using green soap with 3% hexachlorophene. On the third day of scrubbing he was complaining of sore hands and the skin was quite red. By the fifth day of use his hands and arms were hot, swollen and red. Although hexachlorophene showed a low incidence of skin irritation and sensitization when tested in 1% strength by patch tests[19] it has been reported[8] that when it is used in soap with a brush about 50% of people have at least some subjective skin irritation. In this instance the dermatitis subsided a few days after hexachlorophene was discontinued and green soap used in its place. After about a week the surgeon volunteered again to use hexachlorophene in green soap but without a brush. This he did for many days with no subjective or objective skin irritation. Therefore, in the light of this case of frank dermatitis it was felt that a brushless technique would have to be adopted if hexachlorophene were to be used. No one has developed skin irritation since the brushless scrub technique was adopted.

TABLE II.

	Number of colonies per c.c. of rinse water (1,000 c.c.)				
Days washing agent used	*1*	*2*	*3*	*4*	*5*
Green soap—					
6 min. scrub					
Preglove rinse*...	300	560	—	—	500
Postglove rinse...	370	1,020	—	—	540
Phisoderm—					
6 min. scrub					
Preglove rinse*...	40	450	300	—	6,000
Postglove rinse...	20	0	0	—	200
Phisoderm and 3% hexachlorophene—					
3 min. scrub					
Preglove rinse*...	6,000	800	50	—	200
Postglove rinse...	10	10	0	—	0

*A two minute wash with cake soap did not precede the preglove rinse.

Brushless surgical wash.—The details of the brushless surgical wash adopted are as follows:

1. Finger nails must be kept short and clean.
2. Wet the hands and forearms.
3. Apply to the hands two shots of Phisoderm with hexachlorophene 3% from the wall dispenser.* Add small amounts of water and wash hands and forearms thoroughly for 30 seconds.
4. Rinse thoroughly.
5. Apply four shots to the hands from the wall dispenser. Add small amounts of water, but no more Phisoderm and hexachlorophene, and wash for: (a) *Three minutes,* if "scrubbing" with Phisoderm and hexachlorophene at intervals of more than three days. (b) *Two minutes,* if "scrubbing" *daily* with Phisoderm and hexachlorophene. (c) *One minute,* between operations if Phisoderm and hexachlorophene are used routinely and exclusively.
6. NO ALCOHOL RINSE.

This procedure has been in routine use in the neurosurgical division of the Toronto General Hospital since July 1, 1950.

Four months after the above scrubbing procedure had been in routine use colony counts of the preglove and postglove rinse water were determined for two of the surgeons for three

*Winthrop-Stearns Company.

consecutive days. These surgeons then stopped using 3% hexachlorophene in Phisoderm and scrubbed only with green soap. The effect of this change in procedure on the total number of bacteria recoverable in the preglove and postglove rinse water was followed on various days thereafter.

As shown in Table III relatively small numbers of bacteria were grown from both the preglove and postglove rinse basins when hexachlorophene was used as the washing agent. Similar low counts were obtained after this agent had been replaced by a standard six minute wash with green soap and a brush followed by an alcohol rinse until this procedure had been in routine use for some 14 days. Thereafter much higher counts were obtained which ranged in total numbers to values similar to those for other persons using green soap as shown in Tables I and II. One is forced to the conclusion that the continued use of 3% hexachlorophene affects the skin flora so that only small numbers of bacteria can be recovered from rinse basins and that this effect persists for nearly two weeks after its use has been discontinued.

TABLE III.

The number of bacteria recovered in rinse basins from the hands of two surgeons who had been using a brushless scrub with phisoderm and 3% hexachlorophene for several months prior to the beginning of the experiment. After samples had been taken for three consecutive days the use of hexachlorophene was discontinued and replaced by a six minute green soap scrub with a brush followed by an alcohol rinse.

	Number of colonies per c.c. of rinse water (1,000 c.c.)										
Days	*1*	*2*	*3*	*8*	*10*	*15*	*17*	*24*	*27*	*28*	*29*
Surgeon "A"											
Preglove rinse*	20	100	40	—	40	70	90	2,910	5,980	——	——
Postglove rinse	40	50	0	—	—	80	0	——	140	——	——
Surgeon "B"											
Preglove rinse*	100	10	270	10	130	120	990	5,960	290	16,080	3,700
Postglove rinse	10	10	40	0	20	20	20	280	690	320	380
Washing agent used	3% HEXACHLOROPHENE IN PHISODERM			GREEN SOAP + ALCOHOL RINSE							

*A two minute wash with cake soap did not precede the preglove rinse.

SUMMARY

Hexachlorophene is a chlorinated phenol that is now widely used in the surgical scrub. Its advantages over previously used phenol derivatives are greater germicidal action, and prolonged retention by the skin. Our studies confirm that hexachlorophene has a lasting effect on the skin and that its regular use allows a great reduction in the time devoted to scrubbing. It is not necessary to use it whenever the hands are washed or even every day. However, when first used or after long disuse the scrubbing time must be longer.

A brushless surgical wash with Phisoderm containing 3% hexachlorophene has been used by the neurosurgical division of this hospital for over a year. The use of a brush with hexachlorophene sometimes causes skin irritation.

This investigation was carried out under the direction of Dr. Philip Greey, Professor of Bacteriology, University of Toronto, and with the co-operation of Drs. K. G. McKenzie and E. H. Botterell of the Division of Neurosurgery, Toronto General Hospital.

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Politeness makes a man appear outwardly as he should be within.—La Bruyère.

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THE CLINICAL USE OF EXFOLIATIVE UTERO-VAGINAL CYTOLOGY*

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ISOLATED REPORTS of the diagnosis of cancer from malignant cells in puncture fluids and secretions have appeared during the last century. The first co-ordinated study of utero-vaginal cytology was published in 1917, when Stockhard and Papanicolaou reported observations on the vaginal secretion of rodents. This work was extended to the field of human cytology in 1928. A monograph by Papanicolaou and Traut in 1943 entitled "The Diagnosis of Uterine Cancer by the Vaginal Smear" provided the impetus for systematic study of the so-called exfoliative cytology of the female genital system. Since that date, numerous observations have been reported and the study of vaginal smears for the detection of cancer cells has attained a position of importance in diagnosis. The purpose of this paper is to discuss the present clinical use of exfoliative utero-vaginal cytology.

A vaginal cytologic smear is a slide preparation of material lining or travelling down the utero-vaginal canal.

The surfaces which line body cavities or canals continually desquamate cells into the lumen. If a new growth is present on the surface, cancer cells are shed and can be collected for examination.

METHODS OF COLLECTION

The present methods of collecting material are: (1) Aspiration of secretion. (2) Surface scraping from cervix and cervical canal. (3) Endocervical smears.

Secretion in the posterior fornix of the vagina is aspirated with a slightly curved glass pipette.[16] This is the commonest and simplest method in use since no preparation and no speculum is required to procure the aspirate.

A surface scraping or swab is taken from the entire squamo-columnar junction of the cervix and adjacent endocervical canal. A spatula made of a wooden tongue blade,[2] or a gelfoam sponge,[10] is used. A modification of this method is to take a swab from the entire endocervical canal and vaginal cervix.[19]

The highest concentration of cells occurs with surface scraping and endocervical smears. This represents the most desirable method; it requires the use of a speculum.[7]

Smears are made with material from the posterior fornix of the vagina, the cervix and endocervical canal in clinically suspicious cases. Most laboratories request two slides from each patient.

In clinically suspicious cases, Papanicolaou employs intra-uterine aspiration by means of a laryngeal cannula. Aseptic precautions are necessary. This procedure is in addition to the above techniques when a uterine curettement does not reveal the presence of cancer.

Fixation and transport of material. — Thin smears prepared upon glass slides are immersed at once in a solution of equal parts of 95% alcohol and ether, and submitted in solution to the laboratory.[16] An alternative method is to add a drop of glycerine to the alcohol-ether fixed (30 minutes) smear, and to cover the preparation with another glass slide.[4]

Some laboratories accept air dried smears with or without preliminary fixation and without the application of glycerine. Cellular distortion may occur but such preparations are adequate for the detection of tumour cells, provided the cytologist is familiar with this technique.

Gelfoam sponge preparations require immediate fixation in 10% formalin and their subsequent treatment is identical with that of a fixed tissue section.[10]

Aspirated material may be collected in a test tube and fixed at once by addition of several c.c. of 10% formalin or of alcohol-ether mixture. The cells are later centrifuged and the sediment embedded in paraffin.[3, 12, 20]

Stains.—Preparations stained by the trichrome method of Papanicolaou show the best cytoplasmic and nuclear differentiation. In most laboratories, hæmatoxylin and eosin are considered satisfactory and are more practical. The nuclei stain well and the smears can be processed together with routine tissue slides.

TERMINOLOGY

Several types of cells are present in the stained preparation. (1) Normal utero-vaginal epithelium. (2) Cancer cells. (3) "Atypical" cells. (4) Miscellaneous cell types.

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Abstract from Investigations of Exfoliative Cytology.
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1. *Normal utero-vaginal epithelium.*—Exfoliated cells are derived from various levels along the utero-vaginal canal. Those from the endometrium are designated as "endometrial", those from the endocervical mucosa as "endocervical". All workers are in agreement on this point. A difference in terminology exists, however, in reference to squamous cells originating from the epithelium of the vaginal cervix and vagina.

In order to appreciate the terms used in reference to the squamous group of exfoliated cells, it is first necessary to review the histology of the cervical and vaginal epithelium. This epithelium consists of an inner stratum mucosum (stratum germinativum) covered by an outer layer called the stratum corneum.

The deepest cells of the stratum mucosum are in the form of a palisade of cuboidal to columnar cells arranged upon an indefinite fibrous connective tissue basement membrane. Overlying this palisade, are 2 or 3 layers of "prickle-like" cells without prickle connections (also termed the stratum spinosum profundum). The remaining cells of the stratum mucosum are true prickle cells, united by prickle-like intercellular attachments.

The stratum corneum, loosely adherent, partially cornified, mature, surface cells, is derived from the underlying stratum mucosum. These surface cells are continually involved in a cycle of formation and desquamation.

Exfoliated basal cells originate from the basal layers of the stratum mucosum. Papanicolaou differentiates outer basal or parabasal cells and inner basal cells. The latter arise from the palisade of cuboidal to columnar cells resting on the basement membrane.

Cells are referred to as intermediate, navicular, or pre-cornified when shed from the true prickle-cell layer.[9, 11, 16] Cells from the stratum corneum are called the squamous, cornified, or superficial type of cell.[11, 16, 22] Glycogen fills the maturing pre-cornified and the early cornified cells. This process is controlled by the presence of an adequate œstrogen level.[22]

2. *Cancer cells.*—Three major characteristics identify cancer cells: abnormally large nucleus and nucleolus, hyperchromatism, and variations in the shape of the nucleus.[9] Endometrial and endocervical cancer cells are usually undifferentiated. Cancer cells from the squamous covering of cervix and vagina are either differentiated or undifferentiated depending upon the layer of origin. Those arising from the adult superficial layers of the epithelium exhibit squamous features, those from the basal (immature) layers lack differentiation and are, as a rule, more anaplastic.

3. *Atypical cells.*—Atypical cells are abnormally large cells not showing all the criteria for cancer cells. Their origin is often unexplained. These are not structurally normal cells but lack sufficient diagnostic criteria to be considered cancer. The significance of atypical cells in diagnosis is discussed below.

4. *Miscellaneous cell types.*—Pus cells are often seen in vaginal smears. They usually represent a primary inflammatory process but are sometimes present secondarily with carcinoma. Clumps of pus cells should make one suspicious of a possible neoplasm. Pus cells may obscure the presence of tumour cells in advanced cases of carcinoma. Other types of cells which may be found in these preparations are red blood cells, histiocytes (phagocytes) and trichomonads. Bacteria and cellular debris are also present.

DIAGNOSIS

A smear showing a preponderance of cornified or superficial cells designates œstrogen activity; it is the normal finding during the fertile period. Cells remain in the pre-cornified state when œstrogen production becomes minimal during a normal menstrual cycle. A post-menopausal or pre-pubertal smear is composed chiefly of basal cells.

The discovery, apart from menstruation, of microscopic evidence of bleeding, warrants further investigation, and careful follow-up, even though vaginal examination reveals no apparent disease. Similarly, the discovery of endometrial cells, apart from the normal menses, requires investigation by biopsy and curettage. If the latter procedures do not reveal cancer, the case can be followed by repeating the biopsy as indicated. These procedures are most important during the menopausal and post-menopausal periods.

Atypical cells may indicate the presence of a neoplasm. However, they are observed in certain non-cancerous processes including inflammation, irradiation, diminishing ovarian activity, during the administration of œstrogen, in the presence of polyps, and in cases of abortion. Further investigation including biopsy is imperative in the presence of atypical cells.

Cancer cells in exfoliated material are recognized by the same diagnostic criteria as for the individual malignant cells of a tissue section. Although in some centres a diagnosis is made on a single cancer cell, other workers employ more strict criteria and do not diagnose cancer in smears unless multiple tumour cells are present.[5]

INTERPRETATION

Vaginal smears for the diagnosis of cancer are reported differently in various centres. Papanicolaou,[17] segregates such smears into five classes:

Class I.—Absence of atypical abnormal cells.
Class II.—Atypical cells present but without abnormal features.
Class III.—Cells with abnormal features suggestive of but not conclusive for cancer.
Class IV.—Cells and cell clusters fairly conclusive for cancer.
Class V.—Cells and cell clusters conclusive for cancer.

The staff of Vincent Memorial Hospital for Boston,[22] reports smears as negative, doubtful or positive. Doubtful smears are repeated 2 or 3 times and a final decision rendered on all the smears. In positive smears an attempt is made to classify the type of tumour present; for example, "positive, consistent with adenocarcinoma" or "positive, consistent with squamous carcinoma".

In other centres tumour cells are reported as present or absent, while atypical cells are reported and subclassified where possible, as suspicious of cancer or as suggestive of a non-neoplastic process. In either instance, further investigation, including biopsy, is requested by the cytologist.

TREATMENT

In the present state of our knowledge, a diagnosis of cancer by vaginal smear must be confirmed by biopsy before the initial treatment. A smear does not indicate whether or not the cancer is invasive or non-invasive. Errors of diagnosis still arise in the hands of the most expert.[8, 13, 21] The therapy of non-invasive cancer differs from that of invasive cancer. Treatment must *not* be started unless the diagnosis is confirmed by a positive biopsy.

If the first tissue examination does not reveal the presence of cancer, multiple simultaneous biopsies should be taken, or the patient followed by vaginal smears and repeated biopsies. Multiple biopsies are taken at the squamo-columnar junction from each lateral angle and the anterior and posterior lips of the cervix.[1, 6] A complete circular ribbon of tissue from the squamo-junction may reveal the presence of cancer not manifest on clinical examination, but detected in a smear.

Carcinoma of the cervix remains non-invasive for at least 2 to 6 years.[18] The patient is not subjected to an increased hazard by delaying therapy until such time as a positive biopsy is obtained. The absence of tumour cells in a smear does not exclude the presence of cancer.

Present indications for the use of vaginal smears.—The examination of vaginal smears for carcinoma by an adequately trained observer has been demonstrated to be of value under certain conditions.[8, 9, 11, 13, 14, 15, 16, 19, 21, 23]

1. As an additional procedure in cancer detection clinics.
2. In routine physical examinations for the detection of symptomless non-clinical cancer.
3. Routinely as an adjunct at random biopsy in clinically non-malignant lesions.
4. In cases of follow-up after cancer therapy to indicate radiosensitivity of the tumour and to detect recurrences early.

Vaginal smears do not replace formal biopsy in the presence of clinical cancer. Most workers are in agreement on this point.

The clinical appearance of non-invasive cancer is not characteristic. While the site rarely appears normal, the gross features of cancer are absent. Suspicions of cancer depend upon the training and experience of the individual observer. Any diagnostic procedure which helps to demonstrate the presence of early cancer is desirable.

SUMMARY

1. The observations of various workers have been presented.

2. Vaginal cytologic smears are valuable: (a) for the detection of symptomless cancer during routine physical examinations; (b) as an adjunct method of diagosis in cases of clinically benign lesions of the cervix where a single biopsy may not show a neoplasm and a smear may detect cancer cells; (c) as an aid in post-therapeutic follow-up to determine radiosensitivity of a neoplasm, and the detection of a recurrence.

3. Smears are best taken by one well trained in the technique and in the problems of microscopic examination.

4. It is stressed that biopsy confirmation of a cytologic smear showing tumour cells is imperative before treatment is instituted for cancer.

5. The absence of tumour cells on a smear does not exclude the presence of cancer.

6. Vaginal smears are valuable as a method of studying the natural history of cancer of the vagina, cervix and the endometrium.

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ECONOMIC ORGANIZATION OF AN ANÆSTHESIA SERVICE IN A HOSPITAL*

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ANY PROGRESSIVE and scientifically-minded hospital staff will recognize today perhaps more than ever before, the necessity of a well-organized service of anæsthesia. The *raison d'être* and the efficiency of such a service leave no room for doubt, when the responsibility for such an organization has been entrusted to a specialist, whose program will not be impeded by some insurmountable obstacle.

The chief of a service of anæsthesia in any hospital, should be a qualified medical doctor, who has made exhaustive studies of this specialty; and with a certificate of competence issued by either a school of anæsthesiology affiliated with the Medical Faculty; or by such governing bodies as The College of Physicians and Surgeons of the Province of Quebec, The Royal College of Physicians and Surgeons of Canada, or their equivalent. The professional anæsthetist is a member of a very young specialty; and if he hopes to attain the same degree of eminence, enjoyed by the other members of the medical staff, he must show outstanding qualities of leadership, scientific knowledge, prestige and personality.

The staff of an anæsthesia service may be either full-time or part-time. The full-time anæsthetist has but one commitment, the interest of his own hospital. Here will be expended his time and energies; here also should be found the reward for his work, his means of subsistence. The chief of an anæsthesia service of any hospital having a bed-capacity of over one hundred, should be a full-time anæsthetist. The part-time anæsthetist is one who devotes a fraction of his time only to the needs of his hospital. It follows therefore that to secure a reasonable income, he must engage in other types of medical practice; for instance, general medicine, public health, laboratory, research, or hospital administration.

These other medical activities, not connected with the specialty of anæsthesia, will not however prevent the part-time man from becoming a good anæsthetist. These situations are very often unavoidable for anæsthetists who must increase their revenue. Every large hospital should also have at its disposal a resident interested in acquiring further training in anæsthesia. The resident may assume the care of uncomplicated cases, but he should not undertake responsibilities on his own initiative. On the contrary, his duties should be determined by the chief of

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staff, who will be in a position to assess his ability. The resident doctor may become an excellent candidate for the school of anæsthesia training.

Then also, an anæsthesia service should have available other doctors to assist during the busy hours. These physicians should be for the most part, candidates who are undergoing anæsthesia training in hospitals, recognized for this purpose; or doctors who are in general practice, in localities not in contact with schools of anæsthesia. It must be recognized however that there are no hard and fast rules governing the complex problem of organizing an anæsthesia personnel in a hospital. Indeed, each hospital has its own problems; for instance, certain institutions are noted for a highly specialized or even for an exclusive type of work.

In general it would seem that one anæsthetist per hundred beds should be sufficient, but this may not always be true. There are several determining factors which must be considered; the number of operating rooms, and the time that they are in service; and also the duration of certain surgical procedures. There is the unavoidable time-consuming plastic and neurosurgical type of operation, the radical interventions for malignancy of the respiratory system, where the skill of not one but perhaps several anæsthetists will be required. One must also take into account discipline in the O.R., the arrangement of the operative schedule, and the punctuality of the surgeons.

A prompt and efficient preoperative preparation in the patient's own room will save the anæsthetist much valuable time. If there is inefficient work or lack of co-operation between the surgical staff and the hospital personnel, there will result a loss of time to the extent of 50% or more, and this in spite of the anæsthetist's efforts to accommodate the patient, the surgeon and the hospital authorities. It can easily be inferred that if the time for profitable work has been thus curtailed, the anæsthetist's income will be affected accordingly, since the latter is dependent on all of these factors. The chief on the anæsthesia service is the one responsible to the hospital and to the medical staff. All his time and energy should be directed toward the proper functioning of his service.

As the necessary qualifications in this specialty are by no means inferior to those in the other specialized fields of medicine, the specialist may reasonably expect from his work a revenue comparable with that of his confrères' earnings. In order that qualified anæsthetists may find it possible to limit their activities to their own particular art, they must be assured a reasonable subsistence in the practice of their specialty. Now, for many reasons it is difficult for anæsthetists to respond to the demands which are made upon them by the hospital, and at the same time to find therein an adequate source of revenue; and, unless some well-developed system exists, this is almost impossible. For instance, the same anæsthetist may be called upon to anæsthetize several patients at the same time; but it frequently happens that he is embarrassed by surgeons who are late in arriving at the hospital; or by such obstacles as badly prepared operative schedules, and surgical operations which later develop into lengthy procedures. Finally, it must be recognized that the anæsthetist can with difficulty fall in line with the operative program and at the same time earn a reasonable living, due to the individualistic character of his work.

It was shown in the early part of 1950, that in a city of 200,000 people, no anæsthetist could earn his living in one hospital alone. Conditions have not much changed since that time. According to this survey anæsthetists must divide their time between several hospitals, or have recourse to "des à côtés" or "side-lines", resulting in a lowering of efficiency in their hospital.

The fact that the anæsthetist must often expend half of his working time in non-remunerative work—organization, administration, examination and maintenance of equipment, may well place him in a position where he will not be paid for his services in his own hospital. Visits to patients, oxygen therapy, and resuscitation rarely have helped to swell the bank account.

The situation can become untenable if the majority of the patients are poor or entered under public charities. When half of the anæsthetist's work is absorbed in the care of public charities cases, underprivileged and other non-profitable services, a living revenue can only be obtained by doubling the work, a condition which would appear to lower efficiency. One other alternative would be to exact higher fees from the small number of pay cases. This last expedient would appear to be most unjust.

When the anæsthetist is remunerated for his medical act, there is equity both for the spe-

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cialist and for the patient. It was noted in hospitals with only one anæsthetist, that individual effort usually accomplished good results; but on the contrary the combined work of several independent anæsthetists invariably led to a state of financial rivalry, which could be described as "la course au trésor" or "the gold rush". This phenomenon never occurs when the work is equally divided among the various members of the team. Thus are eliminated the parasites, for ever on the alert for private cases of short duration, knowing their inability to cope with difficult situations and cases of long duration that will require considerable preoperative and postoperative supervision. It would be interesting if every anæsthetist could use his skill to the advantage of seriously ill patients, regardless of their financial status. The success of the intervention, and the patient's security alone should interest the conscientious anæsthetist.

The application of this principle is realized in a system called a "pool" whereby the work is done in common, under the supervision of the chief of staff, with no thought of the patient's financial rating. The proceeds are then placed in a common fund. To implement this plan a receiving office is organized for all the doctors' accounts in the service; and the proceeds are divided proportionately among the anæsthetists according to a prearranged scheme, agreed upon by both the chief of staff and his assistants.

The expenses incidental to the management of the secretary's office and other clerical work are absorbed by the hospital administration or by the anæsthesia service. In one or the other alternative, the amount to be paid by the patient should be determined by the anæsthetists themselves, no deductions being permitted without their approbation. The accounting is a separate function, and the anæsthetists always have access to the records. The responsibility of this receiving office reverts back to the chief of staff.

This system of collection-in-common functions according to a stipulated agreement dictated by contract, without ambiguity, and worked out along the professional ethical pattern. This contract does not permit exploitation by the hospital, by the chief of staff or by the assistants.

The professional fees are received from the patient at the time the medical service has been rendered, the hospital not being included in any part of this. The hospital, of course, has a right to whatever is included in hospital service; for instance, the cost and upkeep of apparatus, the cost of the anæsthetic agents, gas, ether, blood, sera, and all pharmaceuticals. After all, the surgeon is not required to reimburse the hospital for ligature material, gauze, for the use of its surgical instruments, nor for the sterilization of these instruments. The anæsthetist should enjoy the same privileges, the whole being charged to the patient.

To be valid, the contract should be signed by the interested parties, who are under obligation, to one another, but not to a third party. A first contract is drawn up between the hospital administration and the chief anæsthetist. A second contract then binds the chief of staff and his assistants. Included in the first contract is recognition by the hospital of the chief anæsthetist's prerogative to organize and to implement the work which has been outlined in all its details. It will be further agreed that the hospital has the obligation of furnishing, free of charge, all the necessary material for the care of patients to be anæsthetized. It is even recommended that a detailed list be furnished.

When collections are made by the hospital, it is essential to specify that no discount can be allowed without the chief anæsthetist's authorization. The books of the accountancy department should always be easy of access to all the anæsthetists; these will be in a position to check on the receipts, as well as the returns made to the chief anæsthetist.

In the event that the number of indigent and public charity cases becomes too great or that additional work makes for real hardship, it will be most important that additional compensation be made to the anæsthetist either in the form of a basic salary, or some other form of monetary allocation.

Having always in mind the terms of the contract, the duration of vacations should be determined by the number of years that the anæsthetist has spent in the service. A clause should be incorporated to provide for postgraduate studies, assisting at medical conventions, societies of anæsthesia, etc. Adequate systems will assume medico-legal responsibilities in the event of litigation by patients.

The chief anæsthetist should assume responsibility of the organization and the work done by the anæsthesia personnel. He should also be present every day with a sufficient number of anæsthetists to carry on the work that has to be

done; and especially to provide a man who will be on call at all times, and whenever his services are required. Moreover, the anæsthetist on call should remain at the hospital should the obstetrical departments become busy.

With reference to professional fees, the anæsthetist should enter the amount on a daily report card; and where claims are to be made these are deposited at the receiving office. The chief of staff is also ready to hear and discuss on their merits, complaints directed against members of the service, relative to their work or to their professional conduct. And finally, to avoid all misunderstanding in the application of the contract it would seem desirable to submit the plan to the other members of the Medical Board for approbation, and thus secure their co-operation should any untoward incidents develop.

The contract with the chief of staff should extend over a period of three years. Hospitals being secular institutions where anæsthetists are always in demand, usually do not object to this prolonged commitment with the chief anæsthetist, whom they invariably know and trust. Moreover, when the contract extends over a period of several years, the chief anæsthetist can offer to his assistants a more stable guarantee for the future. An arbitration committee, with a legal constitution, should settle differences in the interpretation of the contract; and its decision should be final.

Now, with reference to the terms of the contract between the chief of staff and his assistants, these are singularly simplified when the doctors are working on a salary basis; but conditions become more complicated if the assistants share in "the pool".

The responsibilities of the assistants are to accept duties under the direction of a chief, to arrive at the hospital at a fixed hour, and to be on call at a prearranged time. The chief, for his part, guarantees to his assistants, two or three weeks' vacation per year at a decided date, and with full pay. He agrees, moreover, to pay a fixed salary, or to divide at the end of each month with the assistants, a percentage of the funds which have been deposited with the service's bank, and after deduction have been made for current expenses.

As a general rule, the contract extends over a period of one year, and is subject to automatic renewal, unless otherwise stipulated by notice given thirty days before its expiration. To permit an assistant to take advantage of a promotion during the year, we may add that no departures will be tolerated, except for illness; unless notice has been given ninety days before the departure. In this way, a qualified assistant may accept a more advantageous position; and the chief anæsthetist can in the interval find a substitute to fill his place.

In cases where the revenues of all the anæsthetists are deposited in the same bank and issued on a percentage basis, provisional clauses will have to be made, relative to the definite departure of a doctor taking part in the monetary pool. The latter will indeed be entitled to part of the accounts for the work which he did before departure, but which will only be honoured at some future date.

In the case of a temporary departure which exceeds one month, the absentee should be allocated his proportional allowance. Following his return, the chief may then reassess his scale of fees. On the dissolution of the service, assistants should be given proportionate amounts, until all the savings in the bank have been exhausted. Finally the arbitration committee should resolve controversial points in the contract; its decision shall be final and not subject to appeal.

The arrangement of the contract may vary according to the needs of the hospital and the anæsthetist; however, recognition of the professional services rendered, and the strict observance of the rules of medical ethics will help eliminate annoyances and misinterpretations incidental to situation which are inaccurate in their definitions.

SUMMARY

I have summed up for your consideration, the means at one's disposal for the organization of an economic pattern in a service of anæsthesia, and the principal clauses that should be incorporated in a contract, in order to assure its proper application.

By following these fundamentals I venture to hope that we shall furnish professional services equal, if not superior to those supplied by the other medical specialties; and this for the better care of patients, and for the continual progress of medical science.

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ULCERATING LESIONS OF THE STOMACH*

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NEARLY EVERY ARTICLE which discusses lesions of the stomach, especially carcinomatous lesions, stresses the apparent lack of early diagnosis. This lack of early diagnosis rests firstly with the patient himself, and secondly with the doctor who first sees the patient. Ogilvie's[1] remark that we should write up in neon lights in every restaurant, "Indigestion does not start after 40 in a man who has been able to eat anything until then", is very apt. The signs and symptoms of early gastric carcinoma are not pain, anæmia, anorexia and weight loss, but only mild indigestion, flatulence and partial loss of appetite. These minor symptoms in a man over 40 are presumptive evidence of carcinoma. One examination and one x-ray is not sufficient. Repeated examinations must be done before a positive or negative diagnosis can be made for certain.

Wangensteen, Tuman and Alvarez have stated that no reliable clinical criteria are available to differentiate carcinoma from ulcer. In a recent review of 1,400 cases of malignant gastric lesions operated upon at the Mayo Clinic[2] for the period 1938 through 1942, 73 cases were found in which no method of diagnosis, short of the pathologic examination of the tissues removed, could be found. Signs, symptoms, x-rays, gastroscopic study, laboratory examinations and tests all failed to indicate definitely the malignant or benign nature of the disease. Even cancers of the stomach behaved in a manner not to be distinguished from benign ulcers when observed and treated medically. They found the duration of symptoms was usually long; many of the gastric lesions were associated with duodenal ulcer. A high percentage had one or more gastric hæmorrhages. Acute perforation of a gastric carcinoma occurred in this group. Of the patients operated upon from 1938 through 1942 for gastric ulcer, 13% actually had cancer.

Since the greatest lessons are learned by the surgeon's own experience, each surgeon should carefully review his work to glean the fruits of his endeavour. The following cases are those operated upon by the author during the period July, 1946 until the present. The series is necessarily small (48 cases). These cases included only gastric lesions; duodenal lesions, if found, were incidental.

Sex relationships were, male 39, female 9. Age distribution: 35 to 45, 5 cases; 45 to 55, 14 cases; 55 to 65, 19 cases; 65 to 75, 10 cases.

The average length of time from first symptoms to operation in the cancer cases was 7.2 months, the shortest time being 1 month. The average length of time in the ulcer cases was 7 years, two cases being 4 months and 6 months in the benign group.

Roentgenographic examination failed to describe the lesion in nine cases (18.7%). In each of 6 cases a duodenal ulcer was described, but a gastric ulcer was found at operation. One case was negative to x-ray, but developed obstruction from a prepyloric carcinoma three months later. One case diagnosed cascade stomach had a huge gastric ulcer 4 cm. in diameter. One case diagnosed prepyloric ulcer on two occasions, had a prolapsing mucous membrane of pylorus, at operation. Five cases diagnosed carcinoma by x-ray were proved to be benign at operation.

Five cases in this series were admitted to hospital in complete obstruction at the pylorus. In each case the obstruction was due to a prepyloric carcinoma. This is contrary to current teaching that complete obstruction is rare in gastric carcinoma.

In each of six cases the presenting symptom was massive gastric hæmorrhage. In one of these the lesion was a huge gastric carcinoma. This patient was a 71 year old man admitted with a hæmoglobin of 28%, and a red cell count of 1,390,000. With blood replacement he was prepared for operation. A huge carcinoma involving the mid portion of the stomach and fixed to the pancreas was removed with difficulty. The patient survived for 6 months.

These cases of massive hæmorrhage from a carcinomatous ulcer are quite rare. Costello[3] reporting 300 cases of massive hæmatemesis found four cases of massive hæmorrhage from a carcinomatous ulcer, 1.3%.

Three cases of massive hæmorrhage were in patients who had had previous gastroenterostomies. In two, large stomal ulcers were found at operation. In the third case there was a diffuse chronic gastritis, but no ulcer was found. These patients had had long bouts of suffering from recurrent ulceration at the stoma culminating in

*Presented at the Canadian Medical Association Convention, Montreal, Quebec, June 21, 1951.

massive bleeding. One fatality occurred in this group.

This is a high incidence of marginal ulcers causing massive hæmorrhage. In Costello's series of 300 cases, 4 were in marginal ulcers. Lewison[4] reporting from Johns Hopkins Hospital, 2,400 ulcer cases, 57 were marginal ulcers and of these 5 were bleeding ulcers.

These were benign lesions of the stoma. Gray *et al.*[5] in a review of the data on 55 patients in whom lesions of the stomach developed after gastroenterostomy confirmed an impression that these lesions showed a high incidence of malignancy. Eighteen or 34% of these 53 patients had malignant lesions of the stomach, requiring subsequent gastrectomy. This is a high incidence of malignancy in ulcerating stomach lesions following gastroenterostomy. It is further proof that this operation should be done only rarely. It will be most interesting to see what the results of vagus section with gastroenterostomy will produce in the next ten or fifteen years.

In the remaining two cases of hæmorrhage, one was a gastric ulcer in which the bleeding artery could be seen in the base of the ulcer.

The last case was the most interesting in this series. This patient was seen by the author ten years ago, following a massive hæmatemesis. She was treated conservatively since she refused operation, and made an uneventful recovery. X-rays at this time showed a benign lesion of the cardia.

Repeated x-rays one year ago were reported as negative. In June 1950, at the age of 72, she again had a massive hæmatemesis. In spite of repeated blood transfusions she continued to bleed faster than the blood could be replaced. She was taken to the operating room in critical condition and an emergency laparotomy was done. A huge mass on the posterior and inferior aspect of the cardia just below the œsophagus was found. The mass protruded into the stomach. A gastrotomy was done. Bleeding was profuse, but it was possible to define an intact mucous membrane over the mass. The mass was freely movable. A nearly total gastrectomy was done, leaving a small fringe of the cardia above the mass with which to make an anastomosis. As soon as the mass was removed the patient's condition improved. Her postoperative course was uneventful. She is alive and well to date.

The pathological report was as follows: The specimen consists of the entire stomach—25 cm. along the greater curvature. The distal edge is beyond the pylorus. The proximal edge is just below the œsophagus. Disposed around this proximal edge is a large multilocular mass 10 cm. in diameter. One lobe of this mass seems to obstruct the œsophagus. The mucosa is intact over the mass except for one fold which is ulcerated. The mass is composed of dense white tissue.

Microscopic sections show tumour mass mostly in the wall of the stomach, composed of interlacing bundles of fibrous and smooth muscle tissue arranged in looped and whorled fashion, presenting the characteristic features of a leiomyoma.

This tumour is the commonest of the rare benign tumours of the stomach. The figures from the Mayo Clinic show that less than 0.5% of gastric tumours are benign. This case demonstrates once again the difficulty in the diagnosis of lesions of the cardia.

The association of two lesions in the stomach at the same time has aroused considerable interest among gastric surgeons. From a study of 1,400 cases of the Mayo Clinic for the period 1938 through 1942, in 18 cases of the series duodenal ulcer was associated with gastric carcinoma.

Most surgeons feel that the presence of a duodenal ulcer is a helpful differential point in the diagnosis of the benign ulcer. The above findings would make one very cautious in using such criteria in establishing a diagnosis without operation.

In this series ten cases had an associated duodenal lesion. Three of these had had gastroenterostomies for duodenal ulcers. Seven had long periods of treatment for duodenal ulcers until the final sickness which led to operation. They all described a change in their symptoms from the typical duodenal ulcer type of distress to the constant, boring pain so suggestive of the gastric lesion. In no case was the association of gastric and duodenal lesion found where the gastric ulcer was a carcinoma.

The division of these 48 cases was 26 benign ulcers, and 22 carcinomatous ulcers. Of the benign group five were stomal or marginal lesions secondary to gastroenterostomy. The gastric ulcers varied in size from 14 mm. to 4 cm. in diameter. Size of ulcer was no indication of the benign or malignant nature of the disease.

One prepyloric ulcer and three gastric ulcers were considered at operation to be definitely malignant. It was only after the pathological report had been obtained that they could be called benign. The difficulty of ascertaining the character of the lesion with the abdomen open is great. This is an extremely important point since the operative attack varies in the two instances. If a radical total gastrectomy is contemplated a biopsy of the lesion or a gland and an immediate frozen section should be done. It is not possible to differentiate the two lesions by any other method. This confusion will involve only a few cases since the majority of the carcinoma cases are well advanced before operation is undertaken. Little is written concerning the differentiation of the lesions with the abdomen open. More attention will have to be given to this problem

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with the advent of the more radical total gastrectomy.

All gastric ulcers must be widely resected even if one feels he is dealing with a benign lesion. The greater and lesser omentum plus all the draining glands should be removed with a properly done subtotal resection. Even if the pathological report shows cancer a better result may be obtained than an improperly done total gastrectomy in which draining nodes were not removed. It is a good rule to treat all gastric ulcers as malignant even after the abdomen has been opened.

Twenty-two cancer cases were encountered. Of these fourteen were considered operable, and eight were inoperable. Eighteen of these had lymph node involvement and four did not show lymph node involvement. Three of the four which did not show lymph node involvement were huge carcinomas. One of the smallest ulcers in the whole series was a prepyloric ulcer 1 cm. in diameter in a woman 68 years of age. This proved to be a carcinomatous ulcer. The lymph nodes in this case were packed with metastatic cancer cells.

There is great variation in the spread of gastric carcinoma to the lymph nodes. This fact is of value in giving a prognosis in this disease. Balfour[6] stated that when there is no lymph node involvement 48% of the cases will live five years. From a study of 962 cases of gastric[7] carcinoma treated at the University of Minnesota Hospitals from 1936 to 1939 inclusive, they concluded that even when a lesion appears to be resectable in its entirety, the presence or absence of lymph node involvement has a three or four fold greater effect on ultimate five year survival rate than does the proficiency of the surgeon and the extent of his resection.

It is not possible to accurately determine the presence or absence of metastases preoperatively. Random sampling of nodes at operation may or may not define metastases. Classifications by x-ray or gastroscopic examination are of little value with regard to operability or resectability or prognosis. It is true, however, that limited tumours are apt to be free of lymph gland spread whereas infiltrating tumours are more likely to have metastases. It is possible to have huge carcinomatous masses without lymph gland involvement.

Where possible, all masses should be removed. The risk with gastric resection in competent hands is now low and the convalescence is short. The patient has a chance of relative comfort for a variable length of time, and perhaps a chance of a five year cure.

The Minnesota report mentioned previously showed a five year survival rate of 12.2%. With more radical methods this survival rate may still be improved upon. Certainly every surgeon would improve his results if the lesion could be found at an earlier time.

CONCLUSIONS

A review of 48 cases of ulcerating lesions of the stomach has been made. Once again, the great difficulty in differentiating the benign from the malignant lesion is stressed. Even with the abdomen open or with the resected specimen open and the lesion in view, the diagnosis cannot be made with certainty in all cases. The presence of the prepyloric carcinoma causing total obstruction at the pylorus in five cases in this small series is an interesting finding.

All ulcerating lesions of the stomach must be treated with great suspicion. Every means of diagnosis must be used repeatedly. Early surgery with wide gastric resection must be done in each case that does not remain healed after a short medical trial of three to four weeks. There is no place for protracted medical management of the ulcerating lesion of the stomach.

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MEDICINE AND THE CHANGING ORDER.—Medicine in industry is no longer limited to medicine *per se*. It is a varied and extensive service requiring an industrial physician who has had undergraduate and postgraduate training in this type of medicine and has served an inplant internship and/or a year or two of apprenticeship in industry. He needs a fundamental knowledge of industrial hygiene, toxicology, and human relations in addition to excellent training in medicine and some background in surgery and psychiatry. He is a specialist whose training must encompass a much broader scope than that required of the internist or the surgeon.—W. F. Ashe, *The Diplomate*, March, 1949.

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CASE REPORTS

TUBERCULOUS MENINGITIS

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The following case report may be of interest to readers of the Journal, first, because of the development of meningitis in an ordinary case of chronic fibrocavernous phthisis under treatment; and, chiefly, because as far as is known cases have not been reported of normal delivery in such a patient with survival of mother and child.

Mrs. A.H., age 34, Metis, housewife. The patient was feeling well until the end of December, 1949, when she developed a cold which became progressively worse with increasing sputum and chest pains. Admitted to Edmonton General Hospital Sanatorium July 14, 1950.

She was in good general condition, and afebrile. Obstetrically she was a para. iv, with the uterus at level of umbilicus. The right tympanic membrane was grey and moist with occasional slight discharge, and impaired hearing, suggesting to the examiner tuberculous otitis media. Otherwise there were no signs except in the chest, which showed percussion impairment and râles scattered through left chest, especially in upper part, where there were also rhonchi. X-ray showed a fairly large cavity, about 3 cm. in diameter, with some scattered infiltration elsewhere in the left lung, and some also on the right. Urinalysis and blood counts were essentially normal, Kahn negative, sputum positive for tubercle bacilli.

Left artificial pneumothorax was attempted unsuccessfully, so she continued on bed rest with apparently satisfactory progress until in October she began to complain of headaches, and later of blurring of vision and seemed confused. There were no neurological signs, but lumbar puncture showed elevation of initial pressure to 400, C.S.F. cell count 43, Pandy positive, total protein 190 mgm. %, chlorides 700 mgm. %, and sugar 13 mgm. %. Unfortunately, repeated guinea-pig inoculations failed to prove the tuberculous etiology of the meningeal condition, but a presumptive diagnosis of tuberculous meningitis was made and treatment with streptomycin instituted, commencing with gm. 1.5 (dihydrostreptomycin) intramuscularly and gm. 0.2 (calcium chloride complex) intrathecally daily. The original symptoms soon subsided, and some dizziness which developed cleared on temporary reduction in streptomycin dosage. Towards the end of the six months' course of treatment the dosage was again gradually tapered off.

The increasing lordosis with advancing pregnancy, plus some osteoarthritis, made the lumbar punctures a bit difficult, but apart from a consistently low blood pressure, running around 90/58, the pregnancy proceeded uneventfully to term with spontaneous breech delivery of a healthy 9-lb. boy on December 21, 1950. Unfortunately, the child's blood was not tested for streptomycin, but the placenta was examined pathologically and showed no tuberculosis, and the child developed normally as shown on examination at three months.

The mother also pursued a favourable course, both the pulmonary disease and the meningitis showing progressive improvement. Intrathecal streptomycin was discontinued on May 14, 1951 and intramuscular August 27, 1951. On discharge August 28, 1951 the pulmonary disease had largely cleared, with apparent closure of cavity; there were no symptoms nor signs of meningitis; C.S.F. pressure was normal; cell count 4; Pandy negative; sugar 47; chlorides 720.

PREGNANCY COMPLICATED BY ACUTE INTESTINAL OBSTRUCTION*

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ACUTE INTESTINAL OBSTRUCTION associated with pregnancy is a rare complication, the incidence reported in the U.S. and England varying from 1:7,500 to 1:64,431 deliveries. Nevertheless any pregnant woman with an abdominal scar must always be considered a candidate for obstruction.

Bellingham, Mackey and Winston in Australia in reporting 10 cases, found 9 had had abdominal operations 7 of which were appendectomies, and 5 operations on the uterus and its appendages.

The obstruction is found to occur usually in the lower or terminal ileum. Of the above group 8 cases were found to be so located. The obstruction in nearly all cases is due to adhesions or bands.

Symptoms and signs are pain, vomiting, constipation, nausea and abdominal distension. The pain is usually cramp-like, but can be continuous if peritoneal irritation is present. These conditions may be thought to be due to the pregnancy and valuable time may be lost, both by the patient in not reporting, and by the obstetrician in delaying surgery. Greenhill emphasizes that during pregnancy acute surgical conditions must be treated regardless of the gestation period.

The following case record is presented.

Mrs. M.L., age 33, gravida ii, living outside the city, was receiving routine antenatal treatment. At the period of her 33rd week of gestation she was admitted to hospital at 2.45 a.m. January 8, 1950, complaining of severe epigastric pain for 3 hours, beginning in the R.U.Q., moving to the epigastrium and then to both flanks. She had vomited once. She had experienced similar bouts of pain in October and December, 1949, from which she recovered without treatment.

On examination, she was tossing about in bed with crampy pain, asking for morphine. B.P. was 120/80,

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pulse 88, temperature 98°. The fundus was at the umbilicus, uterus soft, fetal parts palpable. An old right paramedian scar was present (she had an appendectomy and resection of right ovarian cyst in July 1948 elsewhere—the cyst was lutein, a degenerating corpus luteum). Urinalysis was normal.

There was tenderness in R.L.Q., but no guarding. No cervical dilatation on rectal. There was no vaginal bleeding. Hernial orifices were normal.

Diagnosis at this stage was acute cholecystitis.

By 8.00 p.m. the pain was localized to the R.U.Q., steady and continuous, and referred to the right shoulder. It was not relieved by large doses of demerol. She had been vomiting all day. Temperature 101°, pulse 140, B.P. 120/80. She was pale, breathing rapidly and lying still. The abdomen was distended. No bowel sounds were heard. She was relatively dull in R.U.Q., compared to the left which was tympanitic, and quite tender. W.B.C. was 34,000—96% polymorphs.

A gastric suction was started and a flat plate was taken. There was no evidence of free air, but considerable air in the colon, and air and fluid levels in the small bowel.

A diagnosis of massive strangulating obstruction of small bowel was made, based on the marked tenderness in the R.U.Q., absence of bowel sounds, leucocytosis and shock. At 11.00 p.m. January 8 (24 hours after initial pain) the abdomen was opened by a right rectus incision.

There was a strong smell of *B. coli*, and the bloody fluid in the peritoneal cavity. 5½ feet of terminal ileum was found to be gangrenous with thrombosis and hæmorrhage into the mesentery. Strangulation was due to an adhesion running from the back of the uterus to the posterior abdominal wall. Only the last ¼ inch of ileum remained viable. The ileum was resected and end to side anastomosis to the anterior wall of cæcum was made. 1 million units penicillin and 5 gm. of sulfanilamide were placed in the abdomen, and she was closed in one layer with through and through stainless steel wire sutures. One Penrose drain was placed down to the anastomotic site. 2 bottles of emergency blood were given during the operation. She was continued on I.V. fluids, blood, penicillin, streptomycin, and sulfadiazine. Gastric suction was maintained.

On January 9, at 6.24 p.m. she was delivered after a short, spontaneous labour with low forceps of a female, 4 lb. 11½ oz., in good condition. Local, but no general anæsthesia was used. Her condition improved rapidly. Lactation was excellent, and her milk was sent to the premature nursery for her child. She was discharged on January 31, and her baby three weeks later.

She was last seen by one of us (C.W.C.) August 31, 1951 (19 months later). She had gained weight, was in good health, with regular bowel movements. Hgb. was 93%.

SUMMARY

1. Acute intestinal obstruction is a rare complication of pregnancy.

2. A case of massive strangulation of terminal ileum is reported which required resection of 5½ feet of gangrenous bowel.

3. This patient recovered from her resection and obtained a live baby by normal delivery 20 hours following operation.

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MECKEL'S DIVERTICULUM CONTAINING CALCULI

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MUCH HAS BEEN WRITTEN concerning Meckel's diverticulum, and the various complications and manifestations thereof. An estimate of the incidence of this congenital anomaly varies between 1 and 2% of the population. It does not commonly give rise to symptoms. The complications, in their order of frequency are: (1) diverticulitis; (2) internal herniation, or volvulus, with resulting intestinal obstruction; (3) peptic ulceration, with or without perforation or hæmorrhage; (4) intussusception; (5) neoplasm, such as carcinoid tumours, and (6) calculus formation.

A review of the literature reveals only 11 previously reported cases of calculi found in a Meckel's diverticulum, the most recent by Allan and Donaldson, in 1945. Stones the size of a pigeon's egg have been reported. In approximately two-thirds of the reported cases, the diverticula gave rise to symptoms, usually suggesting acute appendicitis. In the remainder, the diverticula and their calculi were incidental findings when the abdomen was explored for some other reason. In the early days of pathology, these were at first considered to be biliary calculi, but it has since been realized that no communication need exist between the gall bladder and intestine, and that the calculi are indeed formed *in situ*, in the diverticulum. Because of its general interest and comparative infrequency, two such cases are presented. As is usually the case, both presented the probable picture of acute appendicitis. In one, however, the diagnosis was suspected preoperatively.

CASE 1

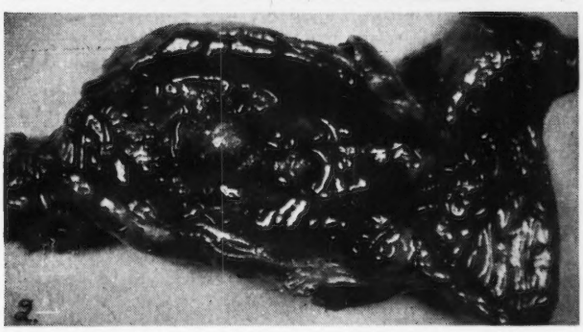
J.G. was a 32 year old white male, whose past history was significant, in that in the past 10 years, he had been admitted to other hospitals on 5 different occasions, because of acute abdominal pain. On each admission he was observed for 3 to 4 days, the pain would subside and he was discharged without being operated upon. Between bouts of pain, he was quite well in all respects. Gastrointestinal tract x-rays on several occasions had failed to reveal any abnormality.

When first seen by us, he stated that he had felt well until 24 hours previously, at which time he developed generalized crampy abdominal pain, felt weak and feverish, was nauseated, and vomited several times. He had had three loose stools, which did not contain blood, and were brown in colour. His vomitus was not unusual. The pain was not localized, nor did it change in intensity.

On examination, he was found to be robust, with a temperature of 100.5° orally, pulse was 96 and the

tongue was dry and coated. The abdomen was slightly distended. There was tenderness throughout the right lower quadrant, maximal 2" to the right and just below the umbilicus, extending upwards into the right upper quadrant, with moderate rigidity in this area. There was no rebound tenderness or tenderness in the costo-muscular angles. Rectal examination was negative. No masses were palpable in the abdomen. The white cell count was 11,800. A diagnosis of acute appendicitis was made, but in view of the past history, and the high site of maximum tenderness, the diagnosis of acute Meckel's diverticulitis was also kept in mind.

The abdomen was explored through a right para-umbilical incision. It was immediately apparent that small bowel was adherent to the anterior parietal peritoneum under the point of maximum tenderness. This was freed, and was found to be a Meckel's diverticulum, acutely inflamed, which had become twisted on itself, and was adherent to the anterior abdominal wall. It measured approximately 3 x 1 inches and was situated 16 inches from the ileo-cæcal valve. An area of induration was present at its mid-point. The appendix was



normal, and was removed. The diverticulum was excised at its base, and the ileum closed in layers over a fine clamp. Postoperatively the patient did well, and at present is in excellent health.

PATHOLOGICAL EXAMINATION

In the gross, the diverticulum measured 7.4 cm. in length, and 4.2 cm. in greatest diameter. The external surface was light pink in colour, except for a bulge at the distal end, which was purple. The wall of the specimen was thickened and indurated, with a constriction at the middle third of the specimen. The distal end of the specimen contained numerous densely hard brown concretions, the largest measuring over 1 cm. in diameter. The inner surface of the diverticulum was finely granular and light brown in colour.

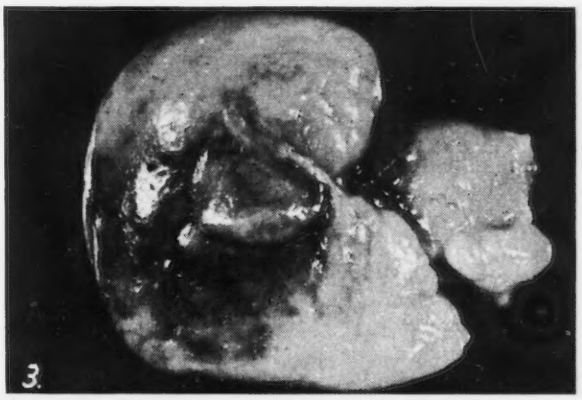
Microscopically, marked œdema was present throughout all coats. The specimen was lined in part by typical small bowel mucosa. In one region there was an area of marked ulceration with a polymorphonuclear infiltration. Adjacent to this, the wall was infiltrated by a number of lymphocytes and plasma cells, and the inflammatory process extended out into the mesentery.

The final pathological diagnosis was: (1) Acute Meckel's diverticulitis. (2) Chronic Meckel's diverticulitis, with calculi formation.

CASE 2

Mr. S.C. was a 39 year old white male, who was first seen by us because of severe right lower quadrant pain of 24 hours' duration. He stated that for many years, he had suffered from vague discomfort in his abdomen, which he described as "indigestion". Six years previously, his spleen had been removed because of traumatic rupture, and he had recovered uneventfully. Concerning the present illness, his pain began in the right lower quadrant, one day previously, had remained localized and had become progressively worse. He was nauseated, and had vomited several times. He had not had a bowel movement for 36 hours, and had no urinary symptoms.

On examination he was found to be flushed, with a coated tongue, and lying quite still. Temperature was



101.0° orally, with a pulse rate of 96. Abnormal physical findings were confined to the abdomen. A healed incision was present in the left upper quadrant. The abdomen was not distended, and was acutely tender to the right of, and just below, the umbilicus, with marked rigidity in this region. Rebound tenderness was present to this area. No masses were palpable. The white cell count was 14,000. Urinalysis was negative. A diagnosis of acute gangrenous appendicitis was made, and operation performed.

The abdomen was opened through a right McBurney incision. The appendix was normal, but free pus was encountered in the peritoneal cavity. Further exploration revealed an acutely inflamed Meckel's diverticulum, measuring 2½" in length, which had perforated. The incision was extended medially, the diverticulum excised at its base, and the defect in terminal ileum closed in layers. The appendix was removed. One gram of streptomycin was left in the peritoneal cavity, and the abdomen closed without drainage.

Recovery was uneventful, and he did well. The diverticulum was 6 cm. long and 5 to 8 cm. at its greatest diameter. The external surface was mottled red and reddish-black, in part covered by a fibrino-purulent exudate. On section the wall measured up to 0.5 cm. in thickness. The specimen contained numerous densely

hard concretions, measuring up to 1.4 cm. in greatest diameter. The mucosa was rough and dark red in colour.

Microscopically the blood vessels were dilated and engorged with red cells. The entire wall was infiltrated with acute inflammatory cells, and in one area there was complete dissolution of the wall.

The final pathological report was: acute gangrenous Meckel's diverticulitis, with perforation and multiple calculi.

SUMMARY

Two cases of Meckel's diverticulum containing calculi have been described. This condition is the least common complication of this congenital abnormality, the total of reported cases in the literature now numbering 13.

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SPECIAL ARTICLE

THE PRESERVATION OF THE IDEAL IN A UNIVERSITY CHILDREN'S CLINIC*

EDWARDS A. PARK, M.D.,† *Baltimore, Md.*

I SHOULD LIKE TO BEGIN with a quotation from some advice given by Winston Churchill to the Duke of Windsor when he was Prince of Wales:

"War Office,
Whitehall, S.W. 1
19th July, 1919

Sir,

. . . I would advise your not worrying too much about this speech. . . . If you wish to read it out, I should do so quite openly, reading it very slowly and deliberately and not making the least attempt to conceal your notes. Of course it is better if you can find time to memorize it. Rather a good way of dealing with notes at a dinner is to take a tumbler and put a finger bowl on top of it, then a plate on top of the finger bowl and put the notes on top of the plate; but one has to be very careful not to knock it all over as once happened to me."

I have decided that it is dangerous to attempt to imitate a very great man.

First I shall talk about pædiatrics and its changes, then about this Centre and finally I shall express my views as to what a centre like this should stand for and be.

PÆDIATRICS AND ITS EVOLUTION

Pædiatrics differs from all other special branches of medicine, save geriatrics, not as yet definitely established, in that it is determined by an age period instead of by a particular group of diseases or conditions. It includes all the internal disorders of the child and, in addition, natal injuries and ante-natal defects, all too numerous, and embraces all but the more intricate parts of the other special branches of medicine. I can remember when the pædiatrist did minor surgery. Rowland G. Freeman once remarked to me that he could not support himself, were it not for the fees for tonsillectomies. But now, fortunately, the pædiatrist leaves operative surgery alone. He also looks into the future and endeavours to protect the child from all conditions which might interfere with his physical and mental welfare. Indeed, he devotes fully half his thoughts and energies toward making the future not only safe but the best possible. In no other branch of medicine does anything like this all-inclusive function exist. Other specialists only too rarely glance outside their restricted fields.

Why does the pædiatrician do all these things, or, conversely, why do not physicians in adult medicine take the same broad responsibilities? The reason that the pædiatrician can cope with all the disturbances to which the child is heir is that life has not yet lasted long enough for the full development of the individual and for time to produce its complications and havoc. The degenerative diseases and the various breakdowns from wear and tear have not as yet commenced. With the arrival of adult life the problem of medical care has become so vast and intricate that the single mind can deal with it satisfactorily only in limited areas. Illness manifests itself in the child in pure form and is limited in range. The pædiatrician is able to meet his all round problems because they are, relatively speaking, restricted and simple.

But why does the pædiatrician devote himself to a degree that is unique to preventive medical care? He cannot help himself. Preventive medicine has far greater possibilities in the case of the child than in the adult, and its value is far more evident. Preventive medicine consists either in controlling or altering the environment, so that it will be most favourable to the welfare of the individual, or in adapting, *i.e.* changing, the individual so that he will not be

* Dinner speech on the occasion of the Third Annual Meeting of the Medical Alumni Association and the celebration of the opening of the new Hospital for Sick Children, Toronto, October 20, 1951. Professor and Mrs. Alan Brown were also honoured at this dinner.

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harmed by its uncontrollable features. In the child the environment is far more amenable to control or change than in the adult, and the child himself is far more capable of being changed for the reason that he is in the formative stage of his development. Preventive medicine takes advantage of these. The contagious diseases are essentially diseases of childhood. Everyone knows that they lurk in the pathway of the child like wild beasts and sooner or later will spring upon him. When I was a student years ago, it was possible to protect only against smallpox and, for a few weeks, against diphtheria through the injection of antitoxin. Reliance was then placed on hiding the child so that the disease would not find him and if it came close, on speedy recognition and its removal with further hiding of the child, if necessary. We still rely heavily on isolation, in tuberculosis, for instance, but it no longer occupies the place of sole importance. Protection against almost all of the contagious diseases can now be obtained through adaptation measures, serum, vaccine or the antibiotics. In the psychiatric sphere, behaviour disturbances are avoided by wise management of the child, alteration of the environment, or both. Really, supervision of the diet and life of the child is merely preventive medicine. These are foreshadowed in an Idyll of Theocritus, written more than 2,400 years ago, describing the infancy of Hercules, and in particular, the incident when he strangled the serpents. The lines at the beginning and at the close give us such charming pictures that I cannot resist reading them.

"When Heracles was but ten months old, the lady of Midea, even Alcmena, took him, on a time, and Iphicles his brother, younger by one night, and gave them both their bath, and their fill of milk, then laid them down in the buckler of bronze, that goodly piece whereof Amphitryon had strippen the fallen Pterelaus. And then the lady stroked her children's heads and spoke, saying: 'Sleep, my little ones, a light delicious sleep; sleep, soul of mine, two brothers, babes unharmed; blessed be your sleep, and blessed may ye come to the dawn.'

"So speaking she rocked the huge shield, and in a moment sleep laid hold on them."

And, at the close:—

"Thus did his dear mother let train Heracles, and the child's bed was made hard by his father's; a lion's skin was the coverlet he loved, his dinner was roast meat, and a great Dorian loaf in a basket, a meal to satisfy a delving hind. At the close of day he would take a meagre supper that needed no fire to the cooking; and his plain kirtle fell no lower than the middle of his shin."

I said the value of preventive medicine in the case of the child is more apparent than in the adult. This is so not only because the infectious diseases, which are the ones chiefly affecting children, lend themselves particularly to preventive measures, but also because effect follows so closely on cause that the connection is obvious. In the case of the degenerative diseases of the adult the relation between cause and effect is either not so apparent or not apparent at all because of the long lapses of time involved, and the cause of most of them is not well understood anyway or not understood at all.

Then, too, prevention is more feasible in the case of the child for a very practical reason, namely because a higher power, detached and capable of distant vision, the parent in league with the physician, orders the child's life. How much could be accomplished for us adults if each one of us had a private, wise, beneficent, all-powerful dæmon who grabbed cocktails and food out of our mouths, sent us to bed at nine o'clock and in general confined us to the green pastures and still waters. The physician stands ready to be the beneficent dæmon, but, until adversity comes, his efforts are not asked or desired.

How pædiatrics has changed since Dr. Brown and I were students, partly as spontaneous developments from within but chiefly as consequences of the revolutionary progress of medicine as a whole, to which, of course, pædiatrics contributed its share. The pædiatrist then was above all an infant feeder, and infant feeding by itself was a sufficient justification for his existence. I shall not describe the evolution of infant feeding in Canada and the United States though the subject might be of interest to pædiatricians present. I remark merely that in the early days it seemed extraordinarily complicated and difficult, quite out of reach of the average doctor. I heard Dr. Holt refer to infant feeding as a "science". The reason that it was difficult was that it was made so by the pædiatricians themselves, not intentionally, but because of fears and misapprehensions arising from lack of knowledge and experience.

One apprehension was this: Pædiatricians were fixed in the idea that indigestion and failure to thrive were caused by incorrect feeding and that for every particular infant who was being artificially fed there was a particular milk modification which would exactly fit, if it only could be found. I recall how at the New York Foundling Hospital my teacher, Dr. Rowland Freeman, would search for the right mixture. He would begin with a percentage formula. If this would not work he would say, "let's change to Mellin's food", then after a day or two, "let's try sweetened condensed milk". Then he would resort to a whey-cream mixture, to malt soup, etc. Gradually it became clear that the great majority of severe digestive disturbances and nutritional failures were caused, not by faults in the feeding, but by infections which reduced the ability of the infant to handle the food and, further, that the various cowsmilk formulæ, which had seemed on their face values so different were in practice, and also, when analyzed, essentially one and the same, *i.e.* simply cowsmilk with added carbohydrate, the variations in amount and quality of the latter being unim-

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portant. Another misconception was that the infant was different physiologically from the young of animals, requiring food of some very special, though undefined, quality. The restricting influence of the idea that the infant nutritionally occupied a place quite apart was removed when it was realized that he is in reality just a little animal able to thrive on a great majority of foods. One can rear an infant from birth on the foods we adults eat, using meat as a source of protein. The difficulty is chiefly a mechanical one, that of feeding food in solid form. But when one attempts this, he gains great respect for milk as a wonderful device of nature, since it contains its nutriments, including protein of the highest biological value and also calcium, in fluid form and is always pure as it comes from its source. Moreover, if one starts to give nature her due, one must mention the automatic arrangement by which supply of milk is regulated by demand, preventing overfeeding and underfeeding. The infant works and the breast rewards in proportion to effort.

Finally it became evident that many disorders thought to be digestive and badly mistreated as such were really merely natural and harmless rebellions of the digestive system to over- or under-feeding, over-dilution of the milk mixture, etc.

With an apology beforehand for perhaps an error in taste, may I now take you for a moment into the babies' ward. If I were asked to put my finger on the error in infant feeding which stood longest in the way of progress in the United States and Canada at least, it would be the idea that the feeding of the child could be guided by the number and character of the stools. By each crib in Dr. Brown's and my day was a covered enamel pail in which the diapers of the previous twenty-four hours had been collected. On the morning rounds these were carefully scrutinized and according to their number and character the day's feeding was planned. I remember a baby at the New York Foundling Hospital in whom I was particularly interested because the sisters had slyly named him after me, Aloysius Park. I was feeding him with particular care and solicitude from vanity. One morning I found Aloysius' bed empty. I inquired of the matron, Mrs. Marble, where Aloysius was. Assuming a sanctimonious expression she said, "Aloysius died last night." A few beds further on I came on Aloysius. Remarking, "Here is Aloysius," Mrs. Marble exclaimed "Aloysius did not die after all". But the following night he did die. In breaking the news to me, Mrs. Marble said "Aloysius died last night, but he had a lovely stool!"

Great progress was made when it became the habit largely to disregard the stools and to plan the feeding according to the general condition of the child.

In retrospect, it seems as if the pædiatricians had been slow and blundering in not meeting sooner the problem of feeding infants with cowsmilk, but the final results from prolonged trial and error methods, which involved following will-o-the-wisps and doing all manner of foolish things, have been marvellous. The art, not the science, has been so developed that it is now possible, provided external conditions can be controlled, to rear an infant on cowsmilk as well and safely as on the breast.

With the reduction of infant feeding to simple principles the pædiatrician has lost his monopoly. Students are now taught infant feeding so that they can approach it with the same confidence as any other medical problem, and the general practitioner, still guided by directions on cans which are pædiatric teaching epitomized, feeds infants with great success. But though the pædiatrician has lost his proprietorship, he remains the expert to whom people first turn, and the final recourse when anything goes wrong.

With the loss of infant feeding as a special asset of the pædiatrician other openings and needs appeared. I merely allude to them. I have already mentioned the great outlet which came with the development of methods of protection against the contagious diseases. Another outlet came with the development of psychiatry and mental hygiene. These extended automatically into pædiatrics as soon as the emotional disturbances of adults were traced back to their beginnings in childhood, largely through the perception of Freud. From the beginning pædiatricians had been untutored psychiatrists, each according to his lights. The development of child psychiatry has doubled the field of operation and usefulness of the pædiatrician and also his responsibilities.

The recent discovery of the antibiotics has also had a great influence on pædiatrics, an influence which cannot be as yet estimated. It has given physicians generally an undreamed of, easy power over the infectious diseases and so has removed a part of another special vocation of the pædiatrician. I never expected to live to see tuberculous meningitis deprived of its sure death-warrant. Children no longer die of the diseases they used to die of. One can almost say they no longer die. The antibiotics have transferred the responsibility for death to the degenerative diseases in that they have made it possible for the child to run the gauntlet of the infectious diseases into adult life.

I make one more comment on the influence on pædiatrics of the discovery of the antibiotics. Preparatory to the drafting of plans for the Hospital for Sick Children in Toronto a group, led I think by Dr. Tisdall, toured the clinics of the United States in search of ideas. The Harriet Lane Home was one of their stopping points. Their great problem, as in all hospitals for babies, was how to construct the Hospital for Sick Children, so that it would be a safe place. I hate to confess it but conditions in the baby wards of pædiatric hospitals were not unlike those in the obstetrical hospitals before the days of asepsis. Uninfected babies would be admitted on account of feeding problems or for surgical operations. Sooner or later they would almost invariably catch the streptococcus or other bacterial infections present. These infections often were severe and caused death. Should the hospital housing for babies be planned on a single room basis, permitting isolation, or could the

ward system be made safe through the use of ultra-violet light, or sterilizing sprays? Progress in medicine often comes with a bang out of the unseen. The discovery of the antibiotics has not completely solved the problem of hospital construction for the care of babies but it has gone a long way toward making hospitals safe, no matter how constructed.

Incidentally the antibiotics have well nigh done away with that anomalous survival of the pest house of a past era, namely the contagious disease hospital, isolated both from general hospitals and medical schools, an arrangement detrimental to all parties concerned.

Although the pædiatrician can now accomplish wonders, he pays for it by a certain loss. I doubt if the pædiatrician of the future will ever be as expert in recognition of the contagious diseases as the pædiatrician of the past and he will remain ignorant of the courses which the infectious diseases naturally pursue because treatment with the antibiotics will not allow them to run their courses. But skill is required to use the antibiotics well and safely, particularly in children, and the pædiatrician should be the wisest of all in their use.

Dr. William Welch referred to the period from 1880 to 1890 as the greatest in the history of medicine. It was the period when knowledge suddenly erupted into bacteriology and immunology, and perpetual excitement and suspense reigned as the causative agent of one disease after another was discovered. The infectious diseases were then in process of being understood. The period in which we are living, equally magnificent, is the logical sequence to and consequence of the period of 1880 to 1890, for it is the one in which the infectious diseases are being thwarted. My father told me once that a group of Congregational ministers were asked in turn which of past events they would most like to have witnessed. All of them selected some scene in the life of Christ except one, named Joseph Cook, an enormous man, weighing almost 300 pounds, with a round, red face, huge features and sideburns. He said he would like to have been present at the Creation. I wonder where he thought he would have stood. We physicians are in the middle of an extraordinary period of creation in medicine, not so apparent because it is spread over years instead of days. The surge forward of knowledge has been so rapid that I personally have found it a struggle to keep abreast of it. The situation is described, so far as I am concerned, in *Alice Through The Looking-glass*:

" 'Now! Now!' cried the Queen. 'Faster! Faster!' Alice breathless and giddy looked round her in great surprise. 'Why, I do believe we've been under this tree the whole time. Everything's just as it was.' 'Of course it is,' said the Queen. 'What would you have it?' 'Well, in our country,' said Alice, still panting a little, 'you'd generally get to somewhere else—if you ran very fast for a long time as we've been doing.' 'A slow sort of country!' said the Queen. 'Now, here, you see, it takes all the running you can do to keep in the same place. If you want to get somewhere else, you must run at least twice as fast as that'."

I wonder if Lewis Carroll was amusing himself by creating a topsy-turvy world or whether he intended a hidden meaning which he undertook to express allegorically. Because of its continuity William James conceived of consciousness as a stream. To my mind consciousness is not a stream but a track which perception leaves behind it in the memory like the tape from a ticker. But knowledge certainly flows forward in a stream and, to get in front of it, it is necessary "to run twice as fast". In science the current has become so rapid and turbulent that to remain near its head requires constant struggle with much panting. Some men, either as a result of circumstances or otherwise make no attempt to keep up with the stream but stay where they happen to be and others, rather pitiably, try to remain at the front by holding the stream back or delude themselves by pretending that its progress is not real.

Through all these changes the pædiatrician has been obliged to keep altering his front, but he has never lost sight of the child as a whole. Indeed his view has become wider, since it includes the personality as well as the "pulse of the machine". The intimate familiarity with the child in all his aspects is the source of the strength of the pædiatrician, for disturbances in well being are never confined to one particular part without influencing the whole. No problem exists any longer in the life of the child which the generality of physicians cannot meet. But the justification for the existence of the pædiatrician is that he can meet them better because of his more intimate and wider knowledge.

THE PÆDIATRIC CENTRE IN TORONTO: ITS ASSETS AND LIABILITIES

The development of the great pædiatric centre in Toronto has been extraordinary because it has been a national accomplishment, a monument to Dr. Brown and his associates for their influence on child care in Canada. Dr. Lichtenstein of Sweden remarked to Dr. Taussig, "There are three periods in the life of a pædiatrician. First, he hopes to be able to build a hospital, second, he builds it and the rest of his life he spends showing it off". I fear that the rest of Dr. Brown's life is mortgaged.

The advantages of this great centre in Toronto are obvious. It represents in one place and in one organization all that pædiatrics offers and stands for. If the design of the pædiatrician's work, namely the care of the child in his totality, is the cameo, this pædiatric centre is the intaglio. In other great cities all the activities and facilities of the Toronto centre may exist, but they are dispersed, not concentrated, integrated or co-ordinated. There may be such centres as this

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in Europe but this one in Toronto represents the first complete development in North America.

But in its completeness and perfection lie dangers. Dr. Charles Mayo said to me on an occasion when I visited the Mayo Clinic years ago, "Once the clinic was small and we knew everybody. Now that it is so large, we have lost the personal touch". Personal touch means exceptions to rules; it goes naturally with smallness. Size requires efficiency and to obtain it procedures are standardized. Standardized procedures make automatons out of human beings and human automatons leave personal consideration out. And what senseless things human beings can do when they have surrendered the liberty to think and act for themselves and with it has gone every prestige of common sense and how infuriating they can become! The trouble is that efficiency has been standardized and when this standard pattern in all its rigidity is applied to human nature, it does not fit. Efficiency, misconceived or misapplied, defeats itself or its success in one direction is spoiled by its failure in another. It is imperative that in a great institution like this the personal touch never be lost. I shall allude to this subject briefly again.

A second danger is self-sufficiency. Housing under one roof tends to mean withdrawal from contact with other households. The same attracting forces which brought together fragments into a pædiatric whole tend to produce isolation, and isolation in pædiatrics particularly means walls. The vitality of a centre like this is fed by its integration with medicine as a whole.

I hesitate to mention another possible danger, for I am not sure that it can ever threaten this institution. Moreover, I am conscious of speaking from a prejudiced position. The danger which I can envision some time, perhaps in the remote future, is the possibility of too wide a distribution of direction. I think that in general the men heading allied branches of pædiatrics, however distinguished they may be—I refer to surgery, orthopædics, otology, and the rest—may not have the same breadth of vision of the child that the pædiatrician has from his centrally placed position. Group direction may result in losing sight of main issues and in dispersing energies without central plan, or even deteriorate into nothing beyond the daily round of medical care. This last would be a colossal calamity, sacrificing the possibility of a greatness which depends on the birth of ideas for strictly local utility.

But I speak now with great seriousness: The greatest danger before this institution is that which confronts all medical institutions at the present time. We are in the middle of a social revolution. We can see ahead only a step at a time. Private hospitals from economic causes, not from a change in spirit, are losing their functions for the care of the poor and for those of moderate means. Now that private wealth is disappearing so fast, it is inevitable that sooner or later they must claim, or accept state support. With state support the politicians necessarily enter in and many of them, not all, are actuated not by what they think best, but what they judge will be popular with the great mass of people. As a boy, I heard President McKinley say in a campaign speech from the back of a train, "I hold my ear *close to the ground* so that I can hear the voice of the American people". Julia Lathrop's father defined a politician as a man who could tell the difference between a hearse and a bandwagon. But in state support, freedom or direction falls ultimately on the intelligence of the people. What is going to become of a super-model institution like the Hospital for Sick Children, if the unstinted support it requires becomes dependent on the votes of the people? Will the people perceive the importance of the scientific work which led to the discovery of insulin or penicillin? They will recognize the final triumph, but can they appreciate the importance of the many preliminary investigations which made the final triumph possible? Can they be educated to perceive the value of investigation which yields only isolated facts or of investigation which turns out completely barren or is too far removed from common experience to be understood and, therefore, appears devoid of utility?

The apparent progress in science, and indeed in human affairs in general, does not occur according to Bacon's scheme of "gradual ascent" but advances by fits and starts. First there grows a heap of unrelated or obscurely related facts like pieces in a jig-saw puzzle. Then suddenly a key piece is found, perhaps hidden far in the heap, and a whole new section falls into place. Accumulation alternates with solution. Accumulation is gradual, solution sudden. In an extraordinary figure in *Prometheus Unbound,* Shelley describes the way in which social progress takes place, but his figure applies equally well to science,

> ". . . Hark, the rushing snow,
> The sun-awakened avalanche; whose mass,
> Thrice sifted by the storm, had gathered there,
> Flake after flake, in heaven-defying minds
> As thought by thought is piled, till some great truth
> Is loosened, and the nations echo round,
> Shaken to their roots, as do the mountains now."

From the vast mass of facts laboriously piled by many minds Darwin was able to perceive the harmonizing principle of evolution, and the scientific world underwent revolution. Can the people be educated or led to accept the Hospital for Sick Children on trust? That is the vital question. The future of this institution, even in its magnificence, has no immunity. However, two factors work in its favour: Canada has been liberal-minded and far seeing in its envisionment of medical care, and the Hospital for Sick Children has the strength of being a national institution.

THE IDEAL CLINIC

What should an ideal clinic for children be? It should be a place where sick children get the best medical care available anywhere and well children obtain the best guidance how to remain well; where teaching is an accepted part of the day's work; where thought keeps overflowing into new channels of curiosity, and takes practical form in study and experiment; where the spirit which prevails is an intense, burning zeal for the truth, which means constantly to seek to learn more and to do things better; where the human side is never lost sight of or made subordinate to the rest; where there is a broad social outlook and consciousness of obligations to the community, not only to its individual members but to the community as a whole so that the clinic is accepted by general consent as a great directing influence. I should like to discuss briefly some of these attributes. "Walls do not a prison make, nor iron bars a cage". The value and influence of the Hospital for Sick Children will always be determined not by its masonry or the quality of its wards and laboratories, though these will help, but by its men. I now give my ideas concerning the men of a great clinic like this, what they and their work should be.

Hospitals should always seek to become teaching institutions as the surest insurance against obsolescence and decay. Teaching is the greatest single stimulus to good medical care. The hospitals in which medical care reaches its highest development are the teaching hospitals. This is because teaching represents the newest discovery, the latest view, the best procedure, and where these are taught, they must be practised. Teaching has the same reciprocal effect on the teacher, forcing him to be at the forefront of medical thinking and progress. The best teaching takes the form of physiological interpretation, whenever such is possible, that is, the recognition of the abnormal processes inside the body and what they mean. The teachers who can perceive the inner nature of the disease are the great teachers. They are also the great physicians, for those who can understand the disturbances in the normal processes of the body are the ones who best know how to set them right. How many physicians are satisfied to turn their backs on the disease as soon as they can give it a name!

But there is a second kind of teaching which perhaps is the finest of all; I refer to unconscious teaching. When I look back on my life, the men who gave me the most and to whom I feel the most grateful were not those who made the transfer of facts easiest, but those who stimulated me to be like them. These teachers possessed greatness, often of a moral kind, shown perhaps by innate demands for clearness and accuracy of thinking, for the liberality and generosity of their minds, for the elevation of their standards and ideals, or for the breadth of their outlook, and, perhaps, also for their unconsciousness of themselves. Their minds commanded attention wherever they happened to wander. Mattheison in his sketch of the James family described what I mean when he referred to William James' debt to Emerson as ". . . not an assessable sum but rather the pervasive and inescapable debt that a man owes to the largest figure in his immediate background who is devoted to the same pursuit."

But teachers with such qualities are the rare gifts of fortune to any clinic. A member of the Advisory Board of the Johns Hopkins Medical School once stopped Drs. Halsted and Howland in the hall after a board meeting and recounted how he had been called to California as an adviser in regard to a hospital and had there also been consulted concerning the formation of a medical faculty. Said he, "I advised them to head the medical board with a man like Dr. Welch". "Get two or three—get two or three," interrupted Dr. Halsted.

In a great medical centre such as this the investigation of disease is a fundamental requirement. I should like to describe in detail the atmosphere of excitement which prevailed in the early days of the Harriet Lane when Dr. Frederick Tisdall and Dr. Graham Ross were members of Dr. Howland's staff. It was the halcyon period of the Harriet Lane and really the beginning of pædiatric investigation in the United States. But the importance of investigation in the clinic lies only partly in what is found out. It does not often happen that the investigator who "sticks in his thumb, pulls out a plum". More often he pulls out a nondescript raisin or some strange thing no one is sure exactly what or perhaps nothing at all. As important for the clinic as discovery is the stimulatory influence of investigation on the performers and on the environment. Investigation exerts its influence because the investigator is obliged to know his subject intimately and completely. He knows it first hand. He knows the frontier because he works at the frontier, and he knows what lies beyond because he penetrates beyond and is familiar with the reports of other pioneers in the same *terra incognita*.

Then also the investigator is obliged to master and perhaps develop new methods. He brings these into the clinic and they become available for other purposes. Investigation means thinking and thinking breeds discussion; discussion awakens fresh thought in the mind of the thinker and also in the environment. Investigation is the doorway through which biochemistry and the other fundamental sciences enter the clinical departments and through which the clinicians wander out into the laboratories of the fundamental sciences. It is through this door that the men of the fundamental sciences mingle with the men of the clinical departments and become entangled in problems pertaining to human

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beings. The way to become a master of a certain disease is to investigate the disease at the bedside and in the laboratory by every available means and then to ponder and study again. The greatest clinicians I have known, and also the best teachers, are those who have observed, measured, correlated, and considered, tried therapeutically, then observed, measured, correlated, and considered time after time. My grandfather believed that thorough mastication was a great factor in health and when my sister and I visited him, used to amuse himself and us by repeating "Masticate, denticate, chump, grind and swallow". The advice for anyone desiring really to understand disease is to masticate, denticate, chump, grind and swallow.

But in clinical medicine there are investigators in spirit who have never been investigators in deed. Perhaps they never had the chance. They are the men with natural curiosity into the reason for things. In a clinical department they often exert great influence merely by raising questions. The physician who has no interest in the *why* of things is a dull sort of man.

In a university teaching department there should always be two kinds of men, those who do full time hospital work and those who live by practice. Both have their particular values, because, in a sense, their experience is in different worlds. The full time man sees illness in the hospital in its more serious form. He has the organization and the machinery behind him, the laboratories and all the complicated apparatus required for treatment are at his immediate call and he is familiar with their use and significance of the results obtained with them. He becomes extraordinarily proficient in the diagnosis, treatment, and prognosis of severe illness, for the laboratories and postmortem rooms keep furnishing wonderful checks on all his clinical judgments, and give him the accuracy which results from questions solved. The pædiatric practitioner, on the other hand, has an immense experience with illness of minor severity and a multitude of little things of immense importance to know and understand. He sees disease at its beginning—one might almost say before its beginning—meaning before it has declared itself in recognizable form. Moreover, he has constant contact and great experience with the problems of child care arising in the home, involving the comfort and the happiness of the child, the management of the parents, and adjustment of the environment. He is an adept in the psychology of pædiatrics, in holding the confidence of the family when the situation seems dangerous and is confused, and he learns how to say just enough and no more. He has no one to fall back on but himself. He does not have the great impregnable walls of a hospital behind him to take the impact of responsibility and of failure. He is required constantly to act on insufficient evidence. Finally, the practicing pædiatrician has a unique experience in preventive medicine and long range prognosis which is denied the full time pædiatrician working in a hospital. There is no doubt that the full time pædiatrician and the private practitioner see different sides of the picture and are complementary to each other. Each has necessary contributions to make both to the student and to the department as a whole.

In a great clinic it is as important that thought be directed toward provision for the comfort and happiness of its children as toward high medical standards and efficiency. Happiness has a practical value in promoting recovery. And, when parents leave their children, it must be with the knowledge that the children will be understood and receive individual attention and kindness. Indeed, the devotion to the child's spiritual welfare must be so actual that the clinic becomes known in the community as the nearest approach to home that a great institution can ever be made to be. The word, hospital, is derived from the Latin *hospes*, meaning guest. The spirit of the clinic in all its branches should be that its children are its guests. Only until this spirit is attained will the service which the hospital offers to the community receive its full realization.

I can say from experience that in dealing with ignorant, prejudiced and utterly unreasonable parents and with some devil-born children it is difficult or impossible, to retain one's equanimity. I know, too, that it is altogether too easy to economize time and effort by the substitution of force for those devious ways of dealing with children which are so effective and avoid scars, that is, explanation, persuasion and distraction. But these are time consuming. A child can be altogether too easily overpowered and treated as something inanimate. Samuel Johnson infuriated Mrs. Thrale by calling her "a thing" and it is not pleasant to anyone to be treated as such. I have often thought that we would not so often hold the nose of a child, so that he had to open his mouth to breathe, and then insert two tongue depressors between the teeth in order to get an excellent view of the throat, if he were Joe Louis or even Winston Churchill.

The work of the hospital pædiatrician is purely humanitarian. He receives no remuneration from his patients so that no personal economic motive enters in to bring conflicting consciousness of self. In the current of his work the natural feelings of the heart run free. He has all the joy of the true missionary in only giving. But hospitals have two kinds of staff, medical and executive. The executives in the admitting office receive no fees from the patients for their services either, so that no personal economic motive exists in their work, but they are not free, for it is imposed from above, often with the heavy hand of necessity. Their work is to see that every patient pays fairly for what he receives. They pry, because it is what they are there for, into the privacy of the parent's life,

concerning wages, savings, financial resources outside themselves and the prospects for the future which can be drawn on, and then they levy the toll. Perhaps they do it with great kindness. But the moment chosen is the worst possible, when the thoughts of the parents are all elsewhere in a bewilderment of hopes and fears and feeling of helplessness and of surrender to anything.

This picture is overdrawn, but not in all instances. The admitting officer may seem the very antithesis of the good Samaritan, and his attempts at equity interpreted as exacting the pound of flesh. Hospital executives of my acquaintance are fine people. I've known them well. But their occupation lies on the other slope of the hill from that of the doctors and nurses and sometimes completely out of sight. Indeed, the work of the executive and medical branches of the hospital are often as unco-ordinated and unrelated as if there were no connection between them and, as already pointed out, the larger the hospital, the more this is apt to be the case.

The greatest problem with which great hospitals have to contend is, not to obtain medical efficiency—that is easy—but to safeguard the multitude of little things which preserve the true spirit of charity, as bespoken in the Beatitudes. The executive branch of the hospital often undoes all the gratitude which the medical branch inspires. I wish that, in general, hospital executives and also trustees who ordinarily sit aloof, realized that the preservation of the spirit of personal consideration and kindness is their responsibility equally with the medical staff, that it is second only to the maintenance of medical efficiency, and that, in proportion as the hospital is loved by the community as well as respected, the problem of support is lessened.

THE PARTICULAR SATISFACTIONS OF THE PÆDIATRICIAN

The work of the pædiatrician should be particularly happy because it is placed in the middle of youth and hope. "Babies cannot lie" was an oft repeated aphorism of Dr. Jacobi. However, they hold their secrets. The children's doctor acquires great skill in reading from their behaviour. Since their lives have been brief, so are their histories. This is a relief to anyone who has been forced to work his way through the maze of adult ills, real and imaginary. Provided some part has not been left out or put in wrong during assembly (just as in an automobile), or some accident did not happen at birth, children are perfect machines. Nature is on their side and an ally of the physician instead of being a co-conspirator with the disease. This is the explanation of the adage so full of truth, "Never despair of a sick child". Then, psychologically children are as yet untouched by the world. Their behaviour disturbances are simple to understand because, like the child himself, they are just beginning and often they depend not on faults in themselves but on faults in the environment, and the environment, as already pointed out, is susceptible of adjustment to a degree rarely obtainable in the adult. The problem of meeting the behaviour disturbance of the child often depends merely on understanding it. The parents are often young and inexperienced and lean heavily on the physician, and their attitude of dependence and trust is peculiarly pleasing because it makes him feel his own importance. Gratitude is more remunerative toward the end of life than toward the beginning and pædiatrics is ordinarily not a road to wealth. But its rewards are of a better sort, consisting, aside from the consciousness of help, in having broken the barriers of professional relationship to the open heart. The pædiatrician has all the joys of Great-Heart in *Pilgrim's Progress* when he fought the devils and giants besetting the way and safely guided Christiana and her children to the security of the Delectable Mountains, the final river and in sight of the Promised Land.

HOSPITAL REPORT

ROYAL VICTORIA HOSPITAL COMBINED STAFF ROUNDS NO. 5

The Interpretation of Abdominal Pain Part I.

F. L. McNAUGHTON, M.D.,
R. A. CLEGHORN, M.D. and
C. MILLER BALLEM, M.D., *Montreal*

NEUROPHYSIOLOGICAL ASPECTS

F. L. McNaughton, M.D.

ANY CONSIDERATION of abdominal pain must begin with a reference to the nerve supply of abdominal structures. It is customary to divide the pain pathways into *somatic* and *splanchnic or visceral,* though this division is probably an artificial one, based on anatomy rather than physiology. The somatic pain fibres supply the structures of the abdominal wall, including parietal peritoneum and the peritoneum covering the under surface of the diaphragm. They must also supply the retroperitoneal tissues, and (according to some) the mesenteries, particularly near their attachments to the posterior abdominal wall.

The segmental nerve supply of the abdominal wall extends from thoracic 6 to lumbar 1, while the central part of the diaphragm is supplied from cervical segments 3 and 4 through the phrenic nerve. The splanchnic pain fibres are distributed through the sympathetic plexuses to

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the abdominal viscera and pass through the prevertebral and paravertebral ganglia without synapse to enter the posterior roots and the spinal cord between thoracic 6 and lumbar 2 segmental levels. It is questionable whether the abdominal vagus carries any pain fibres (though it is possible that some pain fibres join the vagus in the thorax). The distal part of the transverse colon, the sigmoid and the rectum possibly receive pain fibres which travel with the pelvic parasympathetic outflow from sacral 2 to sacral 4 segments, which also supply the pelvic viscera. Some nerve fibres from the parietal pleura may supply the mesenteries of the large intestine at the hepatic and splenic flexures.

The pain-conducting fibres from both abdominal wall and viscera transmit their impulses into the same group of sensory neurons within the spinal cord. In this relationship of somatic and splanchnic pain fibres within the cord lies the anatomical basis for the so-called "referred" phenomena—pain, tenderness, muscle spasm, and so forth. All the pain pathways, whether they carry impulses from the abdominal wall or from the viscera, are concentrated in or close to the spinothalamic tract within the cord, and apparently enter the thalamus together. They mediate pain impulses arising mainly from the opposite side of the body.

Each abdominal organ seems to possess a fairly constant segmental sensory supply. The following figures are from J. C. White: Stomach, T 6 to 10; Gall bladder, T7 to 9; Small intestines, T 9 to 11.

From a study of the nerve supply of abdominal structures one can well agree that "the abdomen stretches from the shoulders to the knees". This vivid remark emphasizes the widespread reference of pain which may occur from the upper cervical to the upper lumbar level in abdominal disease. One may think of the shoulder pain due to irritation of the diaphragm; the substernal and left arm pain from gall-bladder and bile duct distension, and similar pain from hiatus hernia; back pain from pancreatitis, perforating duodenal ulcers, and retroperitoneal neoplasm; anterior femoral and sciatic pain reference from involvement of the lumbosacral plexus within the abdomen from various causes. We are still far from understanding the anatomical basis or the mechanisms for many types of abdominal pain but I must leave details of this to others who will follow.

I would like to refer briefly to several neurological causes of pain in or near the abdomen which must be considered in attempting an interpretation of abdominal pain.

Root pain comes first to mind, resulting from irritation of lower thoracic or upper lumbar nerve roots. Tumours involving the nerve roots (primary or secondary) osteoarthritis and other destructive diseases of the lower thoracic vertebræ are among conditions which must be considered. I doubt if ruptured intervertebral disc, *per se*, is often a cause of root pain at thoracic levels only, though the importance of this cause of root pain in the arm or the leg must always be kept in mind. Root pain is apt to be related to back movements, and may seem to be superficial in its character rather than deep, though this is a difficult distinction to make. When pain is radiating in character, this may suggest root involvement, and the presence of girdle sensations may also be suggestive, but sometimes the pain of root origin is dull, nagging, and somewhat localized suggesting localized disease of the abdominal wall and viscera. One should also remember that involvement of lower thoracic segmental nerves by herpes zoster, pleuritis in lower pleural cavity or disease of the ribs may cause reference of pain to the abdominal wall.

The girdle pains of tabetics, and the severe recurring attacks of epigastric pain and vomiting seen in gastric crises must also be remembered. The mechanism of gastric crises is still not understood. It is worth remembering that gastric crises may occur in patients with neurosyphilis even in the *absence* of the frank neurological signs of tabes (Argyll Robertson pupils, the arreflexia, and the ataxia and deep pain loss of the lower limbs).

Abdominal pain occasionally results from a disturbance in the nervous system far removed from the spinal level. Migraine is, of course, often associated with severe nausea, vomiting, and even epigastric pain. Where gastro-intestinal symptoms predominate and the headache is minimal, one may perhaps speak of an "abdominal form" of migraine. Some authors have described periodic attacks of abdominal pain and vomiting alternating with true migraine attacks and report relief with injections of ergotamine tartrate. Such cases undoubtedly occur, but one should be very critical of this diagnosis.

An epigastric aura is common enough in epilepsy, particularly in the case of focal epilepsy due to lesions in or about the island of Reil. Dr. Penfield has shown that electrical stimulation of the insular region will produce epigastric sensations, though he has never reported actual pain in the epigastrium. The insula appears to contain cortical centres influencing abdominal sensation and mobility. Several cases have been described in the neurological literature where abdominal pain recurred at frequent intervals and was considered to be an epileptic "equivalent". An abnormal electroencephalogram has has been recorded, and complete relief reported by the use of anti-convulsant drugs. However, such cases should be scrutinized very critically, and must be very uncommon.

PSYCHOSOMATIC ASPECTS

R. A. Cleghorn, M.D.

Pain is no less real and agonizing when it develops in the absence of gross organic disease. This fundamental fact is sometimes not

recognized, for the failure to find an obvious cause is a frustrating experience to the examiner. In lieu of the presence of the tangible, the physician may easily project his sense of frustration on to the patient, implying that that wretched soul is conjuring up a complaint in order to gain sympathy, attention, or a cosy retreat from a cruel world: in fact, an example of that despicable phenomenon—a malingerer intent on making a fool of the doctor.

The transition from the easily recognizable situation in which pain is the patent progeny of a lesion to that in which only emotion can be identified as the sire, and conflict the dam, is an unidentifiable continuum. As an example of this area in which disturbed physiology is demonstrable, but no lesion apparent, I wish to direct your attention to Addison's disease. Abdominal pain is a not infrequent complaint in this condition (50% cases), most often in the loins. Learmonth has suggested that it may be a viscero sensory reflex (suprarenal nerves to cœliac plexus, thence to splanchnic nerves, to rami communicantes and thence to spinal nerves to the periphery due to involvement of the rich sympathetic plexus in the adrenal region). This is representative of the school of thought that pain must have a demonstrable gross or microscopic pathological source. An alternative explanation is to be found in disturbed physiology of the intestine. Examination after death shows the gut of adrenalectomized animals to be universally and grossly contracted. During life, one not infrequently finds a round hard palpable spastic colon. I would like to suggest that the increased plasma and tissue potassium levels in this disease have potentiated acetyl-choline mechanisms in the bowel, so leading to spasm and hence pain. This is at the level of a biochemical lesion, an understandable one. In the future, we may be able to describe the biophysical accompaniments of abdominal pain of psychological origin in equally plausible terms. Our present inability to do this should not deter us meanwhile from discussing it just because we cannot elaborate the physical events.

The effect of emotions on gastrointestinal function needs no special pleading in view of the abundant and well documented observations of the past few years. Many examples of the effect of emotion on abdominal pain are given by Alvarez. He observed one man, for example, whose abdominal cramps had come on after 2 weeks' lobbying at a state legislature. Fluoroscopy showed deep waves of contraction running across the stomach. The waves became normal as fatigue and excitement wore off. Radiologists are familiar with many other examples.

Experimentally, it is possible to produce gastro-intestinal changes by controlled emotional situations. This is well exemplified by the studies of Wolff and Wolf on their man with a gastric fistula. Other workers have shown that lower bowel changes may be experimentally induced. Almy and Tulin demonstrated this on medical students subject to varieties of pain stimuli. There is still a danger, however, that we maintain the outlook that certain situations or emotions always lead to the same response. Fear, for example, often activates the sympathetic. It is less clearly recognized that it may lead to parasympathetic overactivity. Wittkower demonstrated, over 15 years ago, that similar stress situations led to cessation of gastric peristalsis in some, an increase in others. It is the meaning to the patient and their particular way of handling a situation which leads to a particular response.

Another psychological aspect of importance is that of unconscious mental processes. Some believe that it is a denial of sense to speak of unconscious emotions. However you may view that semantic difficulty, there is good evidence that conflicts of which the patient is not aware until "psychologized" in some way, may be the stimulus to disturbed physiology. For example, hostility which is repressed, unrecognized, but finds its expression in the gastro-intestinal tract rather than through more appropriate channels such as the vocal cords or a strong right arm.

Abdominal pain in psychoneuroses.—Certain acute emotional episodes are accompanied by severe abdominal pain. A middle aged woman experienced such pain after rows with her husband. This was so severe that a surgeon was called. He recognized the sequence, but on the third such sequence found fever and an elevated pulse rate. Following hospitalization, signs of an acute abdomen developed. Operation revealed an obstructed loop of bowel strangulated around an old operative adhesion. The ultimate pain was associated with organic disease.

Severe abdominal pain is seen in that unhappy group of people who are lumped under the diagnosis "mucous colitis" or "spastic colon", though there may be neither. Physical examination does not reveal adequate cause. Psychologically, they are troubled people. The sexually maladjusted woman frequently complains of lower abdominal pain and a pre-existing history of P.I.D. is often only a red herring preventing proper assessment of the emotional factors present.

In *neurotic* people, there seems to be a sensory awareness which is often focused upon the abdomen and pain in the region of scars may be prominent. I was interested to hear the voluntary statement of a patient with Addison's disease recently, to the effect that cortisone therapy had increased the sharpness of all senses, including the sensitivity to venepuncture which formerly had been nothing, and now was painful. Perhaps, this is a clue to the heightened sensitivity of the neurotic whom we believe to be firing their own adrenals rather more frequently than normal.

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The *hysteric* is the classical example of the person with psychological pain. I recently saw such a case, a maiden lady in her fifties whose abdomen looked like an editor's nightmare of corrected copy. There were scars in all directions. She had also lost a leg, and part of a hand, and vomited persistently. Her abdominal pain was relieved by hypos of sterile water. The element of sex conflict and guilt in such cases has been described by Deutsch and others. The pain is a masochistic expiation of the guilt, and also an attention-getting mechanism. There is a conflict between sex desire and repression of it. These are, however, such deeply unconscious mechanisms that to moralize and blame is both futile and fruitless. Another patient who complained of pain in the R.L.Q. during a period of neurotic regression had had an appendectomy as a child. At that time, she had received tenderness and care from her father. Her symptoms in later life indicated a desire for the same sort of attention. In an obscure way, she was gratifying a wish and punishing herself at the same time.

In *depressions* abdominal pain is a common complaint in the middle or older age group. This provides a problem in diagnosis but one which the psychiatrist is able to treat effectively.

MEDICAL ASPECTS

C. Miller Ballem, M.D.

The knowledge of the mechanism of abdominal pain has only begun to unfold. Early in this century the abdominal viscera were considered insensitive and without pain fibres. The concept was, that pain or discomfort from the viscera was felt by way of a visceral-sensory reflex. Later it was proved that the root of the mesenteries and the mesenteries themselves were sensitive. In the 1920's several physicians, as a result of their observations, began to believe that the viscera were sensitive. In the interval it has been shown that the gastro-intestinal tract is supplied with fibres similar to those carrying pain from the skin. The reason for the lack of appreciation of this sensation is due to the relative scarcity of these naked nerve endings.

Pain due to visceral involvement has certain characteristics. It is frequently described by various adjectives—as sharp or dull, burning or aching. One of its main characteristics is the inability to sharply localize the sensation unless the parietal peritoneum is involved. This inability to localize pain has led to much confusion, especially so when the word "referred" is used to describe the phenomenon. For example the pain of acute cholecystitis is often felt in the back about the tenth and twelfth dorsal vertebræ, and many writers call this referred pain. But I doubt if this is so. A more reasonable explanation to fit all the facts would suggest that this is due to faulty localization because of the scarcity of pain fibres. The parietal peritoneum, having a goodly supply of segmental nerve fibres, is able to localize sharply any painful stimulus.

Is there a segmental distribution of visceral pain? This aspect is in doubt, but still the term is often loosely used. The gastro-intestinal tract is not a segmental organ, nor does it arise from such structures. It certainly does not have any characteristic segments to which pain is referred, such as the heart possesses.

What is the mechanism of provoking or eliciting true visceral pain? We know that cutting or crushing small amounts of viscera does not elicit pain. However, if the organ is involved in an inflammatory process, then the pain is readily felt. Again sudden distension of the narrow part of the gastro-intestinal tract will produce a painful sensation. Thus the common factor seems to be a local increase in tissue tension.

The mechanism of ulcer pain is an interesting and conflicting one. The majority of physicians feel it is due to the stimulation of nerve endings in the base of the ulcer with acid. They explain the timing of the pain as being due to the high acid concentration in an empty stomach. However, this idea does not fit in with all the facts. We know there is a hypersecretion of acid during the night in ulcer patients; yet night pain is not nearly such a prominent feature in these cases as it should be, if acid was the important factor.

An interesting concept suggested by Kinsella, is that the ulcer pain is due to an interplay of three factors: (1) the engorgement of the stomach wall that occurs during digestion, (2) pathological hyperæmia of the ulcer, (3) the onset of gastric contractions that usually begin shortly before the pain is experienced. The ulcer area is rigid and unable to contract like the rest of the wall, thus blood from the surrounding area is forced into the ulcer bed. Here the tissue tension is markedly increased giving rise to painful sensation.

This concept would fit many of the known facts about ulcer pain and, in addition, would explain the sudden relief from pain following a vagotomy. That is, the cessation of peristalsis following the operation would eliminate the increase in tissue tension about the ulcer.

Distension of the biliary tree, duodenum or jejunum by a balloon will produce visceral pain. The pain produced by this method is generally felt in the epigastrium and through to the back. It is very difficult for the subjects concerned to determine any difference in sensation when the different structures are stimulated. Other interesting feature of this experimental method of studying pain is the effect of sympathectomy. Here it has been shown that unilateral sympathectomy does not relieve visceral pain, but frequently results in a raising of the threshold and a lateralization of the pain to the intact side of the body.

Another controversial aspect is the rôle of adhesions in producing abdominal pain. The type of adhesions that may cause pain are those with a well defined, often small, attachment to the parietal peritoneum, the other end being attached to a movable viscus. In such a situation abrupt changes in the movement of the viscus may cause pain. The suggested mechanism is traction on the affected mesentery, as well as traction on the parietal peritoneum.

In summary, we know the gastro-intestinal tract is supplied by pain fibres. These nerve fibres travel via the sympathetic nervous system. At least one effective stimulus is that of local increase in tissue tension. The poor localization of visceral pain is due to the relative scarcity of the nerve endings. We are in doubt as to the mechanism of referred pain when it does occur. Recent work casts doubt on the present concept of a segmental distribution of pain fibres to the gastro-intestinal tract.

CLINICAL AND LABORATORY NOTES

A SIMPLE APPARATUS FOR GUTZEIT'S ARSENIC TEST

GUY NADEAU, D.Sc.,* *Mastaï, Que.*

THE GUTZEIT METHOD for the semiquantitative determination of arsenic in biological specimens is extensively used. Numerous modifications (Bragg, Sanger-Black, Osterberg) have also been suggested and are fully described in most clinical laboratory manuals. Different types of apparatus are used, but a very simple one (see cut) can be assembled with the use of common laboratory material. Each consists of:

One volumetric flask (100 or 250 ml. capacity according to the volume of the sample).

One rubber stopper.

One Ostwald-Folin pipette, 3 ml. capacity.

One strip of filter paper (A) impregnated with a 5% aqueous or alcoholic solution of mercuric bromide or chloride.

One strip of filter paper moistened with a 10% lead acetate solution (B).

An aliquot of an acid digest solution of the sample is introduced in the flask together with an equal portion of a 50% sulphuric acid solution (a small quantity of tartaric acid may be useful against foaming), followed by arsenic-free zinc granules. The apparatus is quickly stoppered and the usual procedure is followed through.

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After being used, the Ostwald-Folin pipette is easily cleaned with a concentrated sulphuric acid and potassium dichromate mixture.

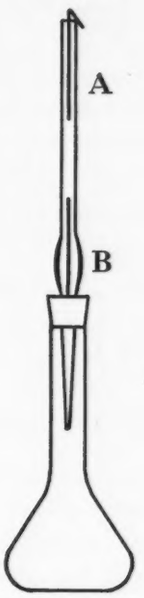

Fig. 1

TRANSFUSION REACTION RELATED TO THE ADMIXTURE OF AQUEOUS GLUCOSE SOLUTION AND BLOOD*

E. M. WATSON, M.D. and
R. H. PEARCE, Ph.D., *London, Ont.*

IN 1950, WILSON[1] directed attention to a possible transfusion hazard related to the indiscriminate introduction into the circulation of a combination of citrated whole blood and an aqueous solution of glucose. The admixture of these two liquids results in gross clumping of the erythrocytes of the donor blood within the tubing of the transfusion set. Such an event can be responsible, presumably, for a transfusion reaction, as exemplified by the following instance which is similar to that recounted by Wilson.

A married housewife, aged 37, was subjected to uterine curettage, necessitated by an incomplete abortion. Although a considerable loss of blood had been sustained, the operative procedure was accomplished without incident, under cyclopropane anæsthesia. As supportive measures, an intravenous drip of 5% glucose in water was started in the operating room and, following the return of the patient to her bed, a transfusion of whole blood was ordered to be added to the infusion. Accordingly, a Baxter bottle containing 500 c.c. of compatible bank blood, type B, Rh positive, was connected to the

(Continued on page 521)

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(Information regarding contributions and advertising will be found on the second page following the reading material.)

EDITORIAL

THE TREATMENT OF CEREBRAL PALSY

TODAY THE PROBLEM of treating the brain injured child is not a simple one of referring the child to a physiotherapy centre, nor is it a problem of applying braces to a child with cerebral diplegia. It is a complex situation requiring a large team of workers, each participating in the program of rehabilitation as the need arises.

The first problem is that of diagnosis. The term "cerebral palsy" is a good one because it covers many different conditions. It represents much more than the classical "Little's disease", and each patient must be studied carefully so that a complete diagnosis can be made. By complete is meant an etiological, neuroanatomical, and functional diagnosis. There must be an orthopædic, psychiatric, psychometric and speech assessment. Finally, there must be a social evaluation.

In the evaluation or assessment of any one child, a whole team of experts and special equipment are necessary. It is obvious that this must be carried out at a special centre, where all the members of such a team are available. The place to find such a team should be at a medical school or a teaching hospital. It is only when one knows the whole problem, neurological, psychiatric, social, and so forth, that one can launch out with the parents and child on an adequate program of therapy.

Treatment of the brain-injured child has many aspects. Some of it requires hospitalization of the child. Some is done in the clinic, and some is carried on at home. A child referred to a centre for the first time is best admitted to hospital for the initial evaluation and institution of treatment. Here all of the members of the team can study the child, and at the same time, physiotherapy, occupational therapy, speech therapy, or whatever else is indicated, can be started. After the evaluation is over and the treatment well underway, then the parents are called in to see how they can carry the treatment into the home. If the child lives near the centre, then certain aspects of the treatment may be continued two or three times a week, as well as being carried on at home.

Physiotherapy and occupational therapy should be aimed at securing muscular relaxation and training voluntary muscle control and movement patterns. It is designed to eliminate tension and involuntary activity of muscles, and consolidate muscle contractions into useful and practical activities. During the past year at the Children's Memorial Hospital in Montreal, a home visiting physiotherapy and occupational therapy service has been started. This has proved to be a practical and useful method of helping a greater number of children, and is something that should be considered by all centres.

Speech therapy is rather specialized, and for the most part, has to be carried on at the centre. It is directed first at the child, and secondly at the parents. A few lessons may be of inestimable value to parents who have to return to a distant home. Many of these children, particularly those with athetosis, are deaf, a deafness that is masked by their other signs. Great care should be taken to see that the deaf athetoid is not labelled as a severely retarded child.

The education of the child presents a special problem. In the pre-school group, kindergarten work is very valuable. This may be carried on in a group, or at home. In the school age group, when physically and mentally able, they should go to a regular school. Otherwise, they may attend special schools where they are together each day.

Orthopædic procedures and braces should be supervised by the orthopædic surgeon, a most essential member of the team.

Parents' responsibilities in the treatment of cerebral palsy are great ones. They are placed on them regardless of their willingness or competence to assume them, and they are required to continue caring for the child so long as he or they may live. In the course of living with their child they meet obstacles that are difficult, if not impossible for them to overcome, and they call on the staff of the treatment clinic for assistance

with their difficulties. Many of these problems are social and emotional. No centre is complete without a trained medical social worker and a psychiatrist. The social worker provides the liaison between the patient, the parents, the home and the clinic. The psychiatrist is able to help the parents understand their own attitudes and behaviour towards the child, and at the same time, to aid and free the child so that he grows up in an environment of security and love, and yet has the freedom to develop along natural lines without the overprotection that is often present. As well as individual interviews, group psychotherapy and parent discussion groups provide an excellent means of helping large numbers of parents with their problems.

The problem of the brain-injured child in Canada is a great one. Probably the vast majority are not receiving any treatment. It is felt that by the setting up of centres, these children can be studied, treatment started and then be carried on at home, returning to the centre for periodic evaluation and instruction. In this way larger numbers can be seen without the necessity of prolonged hospitalization and separation from the love and security of the home.

The treatment of cerebral palsy is expensive. Few parents can afford the cost of an overall program without affecting the needs of the rest of the family. Funds must be found if this crying need is to be met with a program that will measure up to our present standards of medical therapy. J.P.R.

Q FEVER

IN THE LAST ISSUE of the Journal we carried a report by Drs. Pavilanis, Lepine and Morisset of Montreal showing the presence of a significant level of Q fever antibodies in the sera of some people living in the Province of Quebec. This suggests that the disease may be present in this Province, even though it has not yet been diagnosed nor the causative organism isolated.

Q fever is one of the diseases caused by rickettsiæ. These are small micro-organisms intermediate in size between the smallest bacteria and the largest viruses. The first member of this group was described by Ricketts in 1909 in tissues of patients dying of Rocky Mountain spotted fever. During the first world war Prowazek demonstrated the association of a rickettsia with typhus fever. It is interesting to note that both Ricketts and Prowazek died of rickettsial infections contracted in the laboratory.

Other diseases caused by various rickettsiæ were soon recognized. The one factor common to them all proved to be the history of an insect bite. Thus typhus fever is associated with body lice, Rocky Mountain spotted fever with wood ticks, murine typhus with fleas, scrub typhus with mites, and so on. Entomological studies showed that rickettsiæ are primarily parasites of insects, but a few of them have successfully adapted themselves to give rise to disease in man.

Q fever was first described by Derrick in Australia in 1937. He used the term Q (query) to denote ignorance and not Queensland, as is generally supposed. The disease affected workers in slaughterhouses and dairy farms but, unlike many rickettsial diseases, proved seldom fatal. Burnet, in Melbourne, defined the causative organism as a rickettsia—therefore the term *R. burneti*. It was found that cattle within the affected areas were often infected and there was some evidence that the main reservoir of infection was in opossums and bandicoots, from which the organisms were transmitted to cattle by ticks.

The disease remained more or less of academic importance until it showed up in an unexpected form during the Italian invasion in World War II. During the winter and spring of 1944-45 large outbreaks of a febrile disease, resembling atypical pneumonia, occurred among Allied troops. Studies showed the presence in blood of antibodies to *R. burneti*. Identity was soon established by isolation of the organism by guinea-pig inoculation and cultivation in yolk sac of fertile eggs.

Since World War II two areas in the United States have been defined where the disease occurs regularly, namely California and Texas. It has also been reported from Central America, Germany, Israel, Switzerland and Turkey.

In regard to transmission, Derrick suggested that the transmission from cattle was by ticks, whereas Burnet suggested that man becomes infected by inhalation of dried tick fæces. In the outbreak among Allied troops in Italy many of the affected patients gave a history of being housed in very dusty quarters among hay or straw. The evidence collected in California sug-

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gests that some of the infection is by raw milk and that some is conveyed by dust. In any case, laboratory infections are very frequent; indeed Q fever is one of the most infectious diseases to work with in the laboratory. This tends to suggest strongly that dust and droplet infection play an important part. It has been found, for example, that the after-birth of infected cows may contain large numbers of the organisms which, if allowed to dry on pastureland, may remain alive for a considerable time and thus may be inhaled in the form of dust. A.H.N.

Editorial Comments

NEW DRUGS IN TUBERCULOSIS

Encouraging reports have appeared regarding the effects of two new drugs on pulmonary tuberculosis.[1] These drugs are coal tar derivatives and are variant forms of isonicotinic acid. Isonicotinic acid hydrazide (Rimifon*) and its isopropyl derivative (Marsilid*) are definitely bacteriostatic *in vitro* against *M. tuberculosis*, apparently having only a very narrow antibacterial spectrum, since they are ineffective *in vitro* against the common Gram-negative and positive pathogenic bacteria. The effect in arresting tuberculosis in several species of experimental animals is highly promising, being at about the therapeutic level of streptomycin. The presence of resistant strains has not yet been definitely established.

Apparently there are no serious side effects from these drugs; constipation, hypotension and dizziness, hyperreflexia, urinary retention, occasional casts and traces of albumen in the urine, are amongst them.

It is too soon to assess the place of these drugs in treating tuberculosis. It may be added that the descriptions of the first severe cases treated are extremely dramatic. The disappearance of the fever; the sense of well being; the rapid and consistent gain of weight; the return of appetite; all these were most striking. Reduction of positive sputum and some clearing of lesions as shown by x-ray were also found. But we have as yet no clear explanation of the effect of the drug on the tubercle bacillus in the human—whether it is tuberculocidal or tuberculostatic. Its precise toxicity; the optimal dosage; the duration of therapy; whether drug-resistant strains may yet emerge; the possibility of relapse after initial improvement; on all these points we need more information. At the moment there is nothing to show that the use of these drugs will enable us to alter the basic principles of the treatment of tuberculosis. In no other disease must the element of time be given greater consideration; in no other is it more often overlooked.

1. *Quart. Bull. Sea View Hosp.*, 13: January, 1952. (A special issue on this subject.)

*Trade name of Hoffmann-LaRoche, Ltd.

FOOT AND MOUTH DISEASE

Foot and mouth disease is a virus infection of cloven-hoofed animals, and very occasionally and rather doubtfully reported from man. It is highly contagious and causes a morbidity of nearly 100%. While the mortality is usually very low, the effects on the general health of the animals are often permanent and convalescence is slow. It is estimated that recovered animals have only about two-thirds of their former value. The loss in milk and meat is an economic problem of the first importance. While the control of foot and mouth disease is primarily a veterinary problem, the present outbreak in Canada is so serious as to merit our careful attention. It should first be realized that so far Canada has been completely free of the disease, although there have been several outbreaks in the United States. Contrast this with Europe where the disease has been endemic in some regions since the sixteenth century, and severe epidemics occur from time to time. The problem of control is as expensive as it is difficult. Slaughter of the diseased animals calls for compensation. In England the most recent outbreak at the beginning of this year has already cost over a million dollars in compensation. What the cost will be in Canada for the present outbreak is hard to estimate. It is recognized however as the wisest course if any attempt is to be made to prevent the disease from becoming established.

Elsewhere, immune serum and vaccines are being used extensively. But there are at least three immunological types of virus, A, O and C, and the situation is further complicated by variations of these types which do not respond to the present vaccines. Vaccines for each variant do not seem practicable and in any case the duration of the induced immunity is short as well as specific. Great Britain is fortunate in her protective moat, but the protection is only partial. It has not yet been explained why outbreaks on the Continent should appear on the English side of the Channel. The fact that they have appeared usually in the south and eastern parts at a time when migratory birds were coming over has suggested these as carriers. But no confirmation of this is to hand.

In our case the transmission has not been clearly established. No effort is too great to ensure that it be entirely stamped out.

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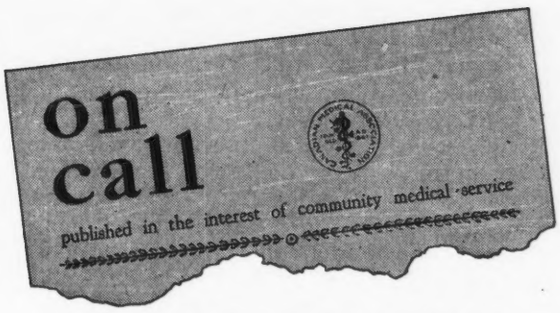

"WHY BOTHER WITH PUBLIC RELATIONS?"

A. D. KELLY, M.D.*

It has been said that no satisfactory definition for the practice of medicine has been evolved. I believe it is equally true that public relations has defied precise definition. However, I suggest that a reasonable working definition of medical public relations is the opinion held of us, the medical profession, by our fellow citizens. Thus to improve our public relations we must be good, do good and tell the public how good we are. In so doing we influence the attitude of the public whose opinion may well determine the whole future development of medicine and its practice in this country.

To a large extent, those opinions are in our hands. In our daily contacts we are largely determining what the public thinks of the medical profession. Like charity, public relations begins at home.

In the profession's public relations there is a phenomenon which is hard to explain yet is a demonstrable fact. It is that despite the good private relations of many individual doctors, the profession as a whole is not regarded with the same esteem. Doctors may be heroes to their patients and friends yet the public will attribute to doctors as a group, motives and attitudes they would not think of attributing to "my doctor". This may be due to the anti-social behaviour of a minority in our ranks and I believe that this is likely the case. The good works of the majority can be more than cancelled out and the reputation of the profession blackened by the defections of the few.

This phenomenon is by no means peculiar to the medical profession. The Canadian Bankers' Association is conscious of the fact that its member financial institutions are not regarded with the same esteem as applies to the branch manager with whom one carries one's overdraft. The milkman and the dairy industry, the lawyer and the legal profession, the farmer and the agricultural industry provide other examples.

Thus we, as an organized medical profession, set out to assess our position with the public, to disclose the common complaints against us and to convince the profession that remedial action would be necessary to correct the shortcomings disclosed.

At the outset, one fact was obvious. It matters little whether the public's complaints against us are well founded or not. If they exist, we should take steps to remove the cause of complaint or to explain adequately why we do as we do. This process of professional soul-searching includes the examination of public opinion polls in Canada and the United States, the analysis of press and radio comment on the medical profession and a detailed consideration of the complaints received at the headquarters of any medical organization.

In our self-analysis we found that the following attitudes are current among many of our fellow-citizens.

1. *The medical profession is not as interested as it should be in the personal problems of the patient.*

As evidence of this we hear such complaints as—"I can't get a doctor at night, on Sundays or holidays".—"I am referred from one specialist to another and none of them is interested in me, just the part of my body that constitutes his field."—"My doctor wastes my time keeping me waiting in his office even though I have made an appointment to see him".—"My doctor never takes the time to explain to me what my condition really is and what he plans to do about it."

2. *The cost of medical care is too high and doctors are making too much money.*

Publication of income tax returns shows doctors among the highest, by occupation. The tangible evidences of the doctor's prosperity are available for all to see. The doctor owes it not only to his patient, but also to himself, to acquaint his patient with probable cost of medical attendance. When hospitalization and drug costs are put together with the doctor's bill, the total constitutes a formidable financial penalty for being sick. This is the most important single factor in creating the public demand for greater medical care security by government action. We as doctors believe that compulsory health insurance would increase the total cost of medical care and degrade the quality of medical services. But there are large numbers of the public who believe that their financial burdens would be lessened by government health insurance. The medical profession has recognized that the application of insurance principles to the unpredictable costs of medical care is sound. We have made a good beginning by the establishment under our own auspices of plans of voluntary medical care. But it is only a beginning. Coverage must be extended to much wider sections of the public through the difficult procedure of enrolling individual subscribers and the inclusion of rural subscribers.

Voluntary prepaid medical care is the profession's answer to the public need. Yet many of our own people give half-hearted support to their own plans. It is not an uncommon patient's

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complaint that the subscriber is often given somewhat less than preferential treatment and dealt with by the doctor as a sort of upper class indigent. The subscriber to plans of prepaid medical care, whether established by us or insurance companies has proved by his action that he is friendly to our views. He deserves the best of treatment.

It goes without saying that to be accepted by the public our plans must keep costs within the reach of the majority of provident people. This requires discretion and restraint in the demands made on the funds. The doctor is in a favoured position to control the excesses of the few patients who would abuse the plans. He must also stifle any tendency on his own part to charge the plan more than he would have charged the patient.

3. *The medical profession is a closed corporation.*

—"A patient with a complaint has no court of appeal"—"There are not enough doctors in Canada and rural areas have been badly served for years"—"Despite the shortage, the doctors restrain competition by discouraging the formation of new medical schools or any increase in the output of existing schools"—"In addition the doctors have excluded qualified European physicians who want to practise here."

4. *Doctors have become materialistic and commercial in outlook. We hear of fee splitting, unnecessary surgery, kickbacks and rebates on glasses and other products.*

All this constitutes a sorry catalogue. Much of it is untrue, more of it unjust; but if any sizable proportion of the Canadian people holds these views it is time we mended our fences.

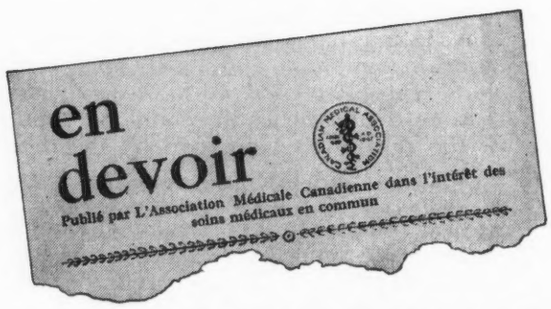
WHAT HAVE WE BEEN DOING TO CORRECT THE SITUATION?

1. We have endeavoured to provide the doctors of every Canadian community with information required to establish an adequate night and emergency call service.
2. We have supported the movement to restore the general practitoner to his rightful place as the family doctor, who is interested in patients as people and who is best able to refer patients to specialists where special skills are needed.
3. We have promoted voluntary medical and hospital care insurance as a means of budgeting against illness costs.
4. We have undertaken to inform Canadians on the supply of doctors and the necessity of maintaining the highest standards; we have encouraged provincial licensing authorities to provide the profession and the public with the facts of the refugee doctor problem.
5. We have made a beginning in the establishment of mediation or grievance committee to hear and adjust patients' complaints.
6. We have studied health insurance in other countries and have analyzed their merits and demerits with respect to their application in Canada.
7. We have endeavoured to clean our house of the unethical and unsavoury practices of fee-splitting and rebating.

This public relations program, as developed in recent years, is predicated on a basic assumption: that the profession must look both inward and outward. Our first task is to set our own house in order and remove the causes of legitimate complaints against us. Just as a people gets the government it deserves, our profession gets the public relations it deserves.

While our public relations program has had this inward emphasis, we have not entirely neglected propaganda and public information. We have prepared and distributed to Canadian secondary schools a filmstrip "Careers in Canadian Medicine". Its purpose is to show medical career opportunities and convey the ideals of the profession to Canadians at an impressionable age. We have endeavoured to further liaison between the profession and the press by the appointment in each community of key doctors to act as intermediaries. We have facilitated press and radio coverage of business and scientific events of our annual meetings and have achieved credit for the profession and a new level of co-operation with these media. We have maintained an information service for Canada's press. We have provided material for speakers to lay audiences.

It is accepted, I believe, that the improvement of the public relations of our profession is a long term project. It is not a subject that can be stimulated in bursts of enthusiasm or accomplished by the application of a magic formula by public relations experts. The custodian of our public relations is every doctor every day in his own field of work.



"POURQUOI NOUS OCCUPER DE RELATIONS PUBLIQUES?"

DR. A. D. KELLY*

Il a été dit que l'exercice de la médecine n'a jamais été exactement défini d'une façon satisfaisante, mais je crois qu'il en est de même pour

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les relations publiques. Cependant, je peux dire qu'il existe concernant les relations publiques médicales, une définition admissible par nos concitoyens, à l'égard de la profession médicale. C'est pourquoi, en vue d'améliorer ces relations publiques, nous devons être compétents, bien agir et faire connaître nos réussites parmi le public. En procédant ainsi, nous orientons l'attitude des gens dont l'opinion peut déterminer tout le futur développement de la médecine et de son exercice dans notre pays.

En grande partie, ces opinions sont entre nos mains. Au cours de nos contacts quotidiens, nous contribuons largement à déterminer ce que le public pense de la profession médicale. Comme la charité bien ordonnée, les relations publiques commencent par soi-même.

Dans le domaine des relations publiques de notre profession, il existe un phénomène qu'il est difficile d'expliquer mais qui est pourtant manifeste. En effet, en dépit des bonnes relations privées de plusieurs médecins pris un par un, la profession dans son ensemble ne semble pas avoir la même estime. Les médecins peuvent être des héros aux yeux de leurs patients et de leurs amis, et pourtant les gens attribueront aux médecins comme groupe, des motifs et des attitudes qu'ils n'oseraient pas attribuer à "leur médecin". Ce fait peut être dû à la conduite anti-sociale d'une minorité dans notre profession et c'est très probablement le cas. Le bon travail de la majorité peut être annulé et la réputation professionnelle ternie par la conduite de quelques-uns.

D'ailleurs cette situation n'existe pas seulement au sein de la profession médicale. L'Association des Banquiers Canadiens admet le fait que ses membres comprenant des organisations financières ne possèdent pas la même estime que le gérant même d'une succursale avec qui tous les gens transigent des notes de débit. Le distributeur de lait et l'industrie laitière, l'avocat et la profession légale, le fermier et l'industrie agricole offrent aussi les mêmes exemples.

C'est pourquoi nous, la profession médicale organisée, nous avons commencé à établir notre position vis-à-vis du public pour découvrir les plaintes courantes contre nous, et pour convaincre la profession qu'il est nécessaire d'agir pour corriger les points faibles que l'on découvre à notre sujet.

Au commencement, un fait était évident. Il importait peu que les plaintes du public contre nous soient fondées ou non. Si elles existent, nous devons agir pour en faire disparaître les causes ou expliquer clairement pourquoi nous agissons de telle manière. Cet examen de conscience professionnel pour ainsi dire, comprend l'analyse des enquêtes sur l'opinion publique, qui ont été poursuivies au Canada et aux Ttats-Unis, l'analyse des commentaires au sujet de la profession médicale dans la presse et à la radio, et une considération attentive à l'égard des plaintes reçues au bureau central de toute organisation médicale.

Au cours d'observations personnelles, nous avons constaté que les attitudes suivantes sont courantes parmi nos concitoyens.

1. *La profession n'est pas assez intéressée aux problèmes des patients.*

Comme témoignages de cette opinion, nous entendons des plaintes telles que:—"Je ne peux obtenir un médecin la nuit, le dimanche ou un jour de fête".—"Je suis renvoyé d'un spécialiste à l'autre, et aucun d'eux est intéressé à mon cas si ce n'est la partie de mon organisme qui concerne sa spécialité."—"Mon médecin me fait perdre du temps en me laissant attendre, bien que j'aie pris un rendez-vous au préalable pour le voir à telle heure."—"Mon médecin ne prend jamais le temps de m'expliquer mon état et ce qu'il compte faire à mon sujet."

2. *Les frais médicaux sont trop élevés et les médecins font trop d'argent.*

Les statistiques de l'impôt sur le revenu montrent que les médecins sont parmi les mieux rémunérés dans leur catégorie. D'ailleurs il est facile de voir que tous les médecins sont très prospères. Il est donc avantageux non seulement pour les patients mais pour lui-même, de faire connaître d'avance le coût probable de ses soins professionnels. Lorsque les frais d'hôpitaux et des remèdes sont compilés avec les honoraires du médecin, le total constitue une punition financière réellement formidable pour le fait d'être malade. Cet aspect constitue le facteur le plus important qui incite le public à demander une plus grande sécurité médicale par l'entremise d'une intervention gouvernementale. Comme médecins, nous croyons que l'assurance-santé obligatoire augmenterait le coût total des frais médicaux et diminuerait en même temps la qualité des services médicaux. Mais il existe un grand nombre de personnes qui s'imaginent que leur fardeau financier serait diminué à l'aide d'une assurance-santé gouvernementale. La profession médicale a reconnu que l'application de principes d'assurance aux frais médicaux imprévus, est une sage mesure. Nous avons d'ailleurs établi un bon commencement dans ce domaine en organisant sous notre propre égide des plans concernant des soins médicaux volontaires. Mais il s'agit simplement d'un début. L'enrôlement dans ces plans doit être étendu à des régions plus éloignées et plus nombreuses par le moyen d'inscription individuelle qui comprendrait aussi des membres dans les sections rurales.

Les soins médicaux volontaires payés d'avance sont la réponse de la profession au problème des besoins du public. Cependant, plusieurs d'entre nous donnent un soutien très peu enthousiaste à leurs propres plans. Il est courant d'entendre un patient dire que celui qui est enrôlé reçoit souvent moins que le traitement préférentiel et son cas est souvent traité par un médecin comme celui d'un indigent de haute classe pour ainsi dire. Celui qui s'est enrôlé dans un plan de soins

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médicaux payés d'avance, que ce plan soit établi par nous ou par des compagnies d'assurance, a prouvé qu'il est favorable à notre point de vue et mérite alors le meilleur traitement.

Il va sans dire que pour être accepté par le public, notre sysème de plans doit être gardé dans les limites des gens économes. Cette situation exige de la discrétion et de la retenue dans notre demande se rapportant aux fonds. Le médecin est dans une postion favorable pour contrôler l'excès de quelques patients qui abuseraient de ces plans. Il doit aussi réprimer toute tendance de sa part à charger au plan plus qu'il n'aurait chargé au patient.

3. *La profession médicale est une corporation fermée.*

—"Un patient qui désire formuler des plaintes n'a pas de cour d'appel"—"Il n'existe pas assez de médecins au Canada et les centres ruraux ont été très mal desservis depuis des années"—"En dépit du manque de médecins, la profession limite la concurrence en découragement l'établissement d'écoles médicales nouvelles ou toute augmentation du nombre de médecins qui sortent des écoles déjà établies"—"En plus, les médecins excluent leurs collègues Européens qualifiés qui désirent pratiquer ici".

4. *Les médecins semblent être devenus matérialistes et mercenaires. L'on entend parler de partage d'honoraires, d'interventions chirurgicales non-nécessaires, de remises et de rabais sur les lunettes ou autres produits.*

Cela constitue une triste énumération car la plus grande partie est fausse et surtout injuste. Cependant, si un bon nombre des Canadiens partagent ces points de vue, il est temps que nous agissions à ce sujet.

Qu'avons-nous fait pour remédier à cette situation?

1. Nous avons fait des efforts en vue de fournir aux médecins de chaque ville canadienne, les renseignements requis pour établir un service adéquat concernant les appels la nuit et en cas d'urgence.
2. Nous avons supporté un mouvement qui veut remettre le médecin général à sa position de droit comme médecin de famille, qui s'intéresse aux patients en tant qu'individus et qui peut être dans une meilleure position pour référer ses patients aux spécialistes lorsque des soins spéciaux sont nécessaires.
3. Nous avons encouragé les assurances pour les soins volontaires d'hôpitaux et de médecins, comme un moyen pour diminuer le fardeau onéreux des frais de maladie.
4. Nous avons entrepris de renseigner les Canadiens sur le nombre de médecins disponibles et sur la nécessité de maintenir les plus hauts standards; nous avons encouragé les bureaux provinciaux autorisés à donner à la profession et au public, des faits précis sur le problème des médecins immigrants.
5. Nous avons établi la base d'un comité de griefs qui s'occupera d'entendre et d'ajuster les plaintes des patients.
6. Nous avons étudié des plans d'assurance-santé dans d'autres pays et nous avons analysé leurs avantages et leur désavantages dans leur application au Canada.
7. Nous avons fait notre possible pour éliminer de notre profession la pratique indigne et malhonnête de la dichotomie et des rabais.

Ce programme de relations publiques tel que développé au cours des récentes années, est fondé sur l'assertion suivante: la profession doit s'examiner elle-mème tout en examinant son entourage. Notre tâche est d'établir d'abord l'ordre dans notre propre maison et d'enlever les causes des plaintes légitimes contre nous. Comme un peuple obtient le gouvernement qu'il mérite, notre profession obtient les relations publiques qu'elle mérite.

Bien que notre programme de relations publiques ait été plus accentué parmi nous, nous n'avons pas négligé la propagande et les renseignements parmi le public. Nous avons fait préparer et distribuer aux écoles secondaires un film documentaire encourageant les carrières dans la profession médicale canadienne, qui fut montré à des gens d'un âge approprié pour une opinion adequate. Nous avons encouragé les relations plus étroites entre notre profession et la presse en nommant dans chaque région, des mèdecins éminents qui agissent comme intermédiaires. Nous avons rendu plus facile le compte-rendu dans les journaux et à la radio, de nos activités scientifiques et courantes et de nos réunions annuelles. Nous avons donc contribuer à mieux faire connaître la profession et nous avons atteint une meilleure coopération avec ces auxiliaires de nouvelles. Nous avons maintenu un service de renseignements pour la presse dans tout le Canada et nous avons fourni des imprimés aux conférenciers qui s'adressent aux profanes.

C'est accepté, je crois, que l'amélioration des relations publiques concernant notre profession, est un problème de longue envergure. Ce n'est pas une tâche qui peut être accomplie sous le coup d'un élan d'enthousiasme ou par l'application d'une formule magique lancée par des experts en relations publiques. Le maintien de nos relations publiques appartient à chaque médecin, tous les jours, et dans son propre travail.

ERRATUM

The opening paragraph of the paper on "Management of Erythroblastosis Fœtalis" (p. 356, April, 1952) showed replacement transfusion as being originally devised by "the late Dr. Ross Robertson". This should read "by the late L. Bruce Robertson".

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MEN AND BOOKS

SIR JAMES HECTOR

ROSS MITCHELL, M.D., *Winnipeg*

IN 1857 THE FUTURE of the territory west of the Great Lakes and north of the international boundary was being widely discussed. For this there were several reasons. Previous to 1846 there had been a dispute between Great Britain and the United States over the Oregon boundary, and the rallying cry of the Democrats under James Polk had been "54° 40′ or fight", but a treaty between the two powers fixed the boundary as the 49th parallel. The discovery of gold in California brought 'forty-niners in myriads over the mountains. In 1857 gold was found on the Fraser River in British North America and another inrush followed. Settlers had been pouring in to the rich prairie lands of the American west, and naturally the question arose whether the prairie lands to the north were suitable for settlement. Up to this time the rule of this vast territory had been vested in the Hudson's Bay Company through its royal charter of 1670. There was agitation in Canada, particularly in Toronto, for opening the west to settlement and Chief Justice Draper of Ontario had gone to London to press the British Government to take action. In Great Britain there was opposition to monopolistic institutions. The renewal of the H.B. Company's exclusive trade licence was to come up for consideration in 1858.

On February 5, 1857, the British House of Commons appointed a committee of nineteen members "to consider the state of the British Possessions in North America which are under the administration of the Hudson's Bay Company or over which they possess a licence to trade". The Committee was headed by Henry Labouchere, Secretary of State for the Colonies, and included Mr. Gladstone, Mr. Roebuck, Lord Stanley and Lord John Russell. It met eighteen times between February and July and examined twenty-five witnesses, among them Sir George Simpson, the three Arctic explorers Sir John Richardson, Dr. John Rae and Sir George Beck, and Lieut. Col. J. H. Lefroy, Edward Ellice and Chief Justice W. H. Draper. Naturally the Hudson's Bay Company, whose sole interest then was the fur trade, opposed settlement.

Actuated by a desire to have first hand and impartial observation of the country, the House of Commons decided to send an expedition to explore "that portion of British North America which lies between the northern branch of the River Saskatchewan and between the Red River and the Rocky Mountains." The leader of the expedition was Captain John Pallisser and his instructions dated from Downing Street, March 31, 1857, were signed by Henry Labouchere. Pallisser was further instructed to winter at Carlton House on the Saskatchewan where he was to meet Lieut. Blakiston. At the commencement of the season of 1858 Capt. Pallisser was to seek out "practicable passes over the Rocky Mountains and south of that known to exist between Mount Brown and Mount Hooker". This pass was on the fur trader's route. Should Capt. Pallisser have occasion to leave the expedition the leadership was to devolve on Lieut. Blakiston or Dr. Hector.

At the time of his appointment Capt. Pallisser was fifty years of age, member of a well-known Irish family and an M.P. Ten years earlier he had hunted buffalo on the American prairie and had published the "Adventures of a Hunter in the Prairies" which went through eight editions. The reports of his second quest were published as a government blue book under the title "Pallisser Explorations 1859". The book of 325 folio pages contains an enormous fund of information on the agricultural possibilities, geology, flora, magnetic observations, and meteorology, an Indian vocabulary and notes on passes through the Rocky Mountains, but it was never a best seller. Only a few copies exist in Canada. One is in the Dominion Archives at Ottawa; the Saskatchewan Historical Society owns a copy incribed with Hector's name, the Hudson's Bay Company in Winnipeg possesses Dr. John Rae's copy, and there is one in the Provincial Library, Winnipeg. The University of Manitoba recently purchased a copy.

The other members of the party were J. W. Sullivan, secretary to Capt. Pallisser, Eugene Bourgeau, a native of the south of France who was the enthusiastic botanist, Lieut. Thomas Blakiston, R.A., who was briefly with the expedition and then carried on separate magnetic and barometric observations and Dr. James Hector, surgeon, cartographer and geologist.

James Hector was born at Edinburgh, March 16, 1834. His father, Alexander, was a writer to the Signet, who, according to H. S. Patterson, K.C. of Calgary, translated and read to Sir Walter Scott old manuscripts which formed the basis of some of the Waverley novels. James attended Edinburgh Academy and the University of Edinburgh where he acted as assistant to Edward Forbes, Professor of Natural History, and to Dr. (afterwards Sir James Y.) Simpson. He graduated in Medicine in 1856 and in the next year on the recommendation of Sir Roderick Murchison, Director General of the Geological Survey of Great Britain, was appointed to the Pallisser expedition, though he was only twenty-three years of age and one year out of the University. This speaks much for his own ability as well as for the education he had received. In the next four years his activities stamped his name indelibly on the western Canadian scene. Dr. G. M. Dawson, the geologist, in 1884 named a lofty and rugged mountain near the source of the Bow River Mount Hector. Hector Lake was so named by T. E. Wilson in 1901. The railway station on

the main line of the Canadian Pacific Railway from which one may reach Yoho National Park is Hector. At the Great Divide, on the boundary line between Alberta and British Columbia there is a small granite monument in his honour.

The Pallisser party reached Sault Ste. Marie June 10, 1857, Fort William two days later, Fort Frances on July 1, Lower Fort Garry July 11, spent a week at Upper Fort Garry where there was a population of 700, then to Fort Pembina on July 27. Passing Turtle Mountain the party reached Roche Perceé where Dr. Hector discovered coal "of a very fair quality", and met with 'Stoni' (Assiniboine) Indians, "who were the greatest horse thieves on the prairies". Moose Jaw Creek was reached on September 16. This was the battleground between the Crees and Blackfeet and the heart of the buffalo country. "The whole region as far as the eye could reach was covered with buffalo", reported Capt. Pallisser, "in bands varying from hundreds to thousands". The party came to Carlton House on the North Saskatchewan on October 8. Capt. Pallisser left to confer with Sir George Simpson and rejoined the party next spring. During the winter Hector made observations of the temperature of the soil at various depths to determine the extent of the penetration of frost.

On December 30 the party reached Fort Edmonton where Hector noted that the coal was inferior. Ten days later he started for Rocky Mountain House, 157 miles due south. Here he met six of the principal Blackfeet chiefs. In Report No. 8, dated October 7, 1858, Capt. Pallisser mentioned the fear felt by their half-breed guides for the Blackfeet and Bloods, also the resignation from the party of Lieut. Blakiston. He notes: "In addition to being an accomplished naturalist, Dr. Hector is the most accurate mapper of original country I have ever seen and is now an experienced traveller."

Hector followed the Bow River right up to the main watershed of the continent and then followed it until he reached a transverse watershed which divides the waters of the Columbia and those of the North Saskatchewan on the one hand from those of the Kootenay and South Saskatchewan on the other. There, according to Pallisser, he found the facilities for crossing the mountains so great as to leave little doubt in his mind of the practicability of constructing even a railroad connecting the plains of the Saskatchewan with the opposite side of the main chain of the Rocky Mountains.

In the same report is Hector's own account. On August 29 he had reached the mouth of a large tributary of the Bow in latitude 51° 10′ N. longitude 117° 26′ W. "Here I received a severe kick in the chest from my horse rendering me senseless and disabling me for some time." The Indian guide, Peter Erasmus, adds a touch of colour. The Indians with the party feared an attack by a hostile tribe and were anxious to push on. They thought that Hector had been killed, so they hastily dug a shallow grave into which they lowered the body. They were about to shovel in the earth when they noticed a flicker in the eyelids of the corpse, so they lifted Hector out again and found to the joy of everyone that he was still alive. The little party was almost without food and no tracks of game had been seen in the neighbourhood. As soon as Hector regained consciousness he sent off his men to try and raise something to eat. Yet even at this time the cause of science was not forgotten. He sent Peter to take bearings of a nearby mountain. Hector notes that it is composed of grey limestone and splintery iron shale all dipping 35° to the ENE. The men returned at night without having killed anything.

Next day he writes, "I was so much better by noon that I took a meridian altitude and found the latitude to be 51° 10′ N." On August 31 the party moved off. The motion on horseback gave him great pain but they managed to get along slowly till noon.

Some twenty days before this incident he had protected a Stoni Indian from Piegans who wished to kill him. This act paid off well since the Stoni was so skilful a hunter, that Hector named him Nimrod. For three or four days after the accident even Nimrod failed to kill game. Hector shot a grouse which they stewed in ends of candles and fat of odd sorts making a supper for five who had existed on scanty pemmican and blueberries. On the next day Nimrod shot a moose and their hunger was stayed. As they followed the stream flowing eastward they came to a river flowing south-east which Nimrod recognized as the Bow from which they had been absent for two weeks. They fell in with a band of Stoneys and obtained game. That night the camp fire spread to a pine tree. The roar of the blaze wakened Hector who caught up the gunpowder and bolted into a swamp. Though there was a brilliant illumination for half an hour no other trees caught fire. "The glare on dark forest and swarthy faces was very striking." On Sunday morning the explorers were wakened at an early hour by the Stoneys singing hymns. Hector noted that the Stoneys were all Christians. "Some can read and write using the Cree syllable characters which were invented by the Wesleyan missionaries."

The naturalist comes out in Hector's journal on several occasions. On August 13, 1859, he caught 36 trout in the Bow River, none less than ¾ of a pound, most of them 1 to 1½ lb. On Cascade mountain a gale blew a humming bird against his face, and away it flew. Shortly he came to a descent into a corrie where he startled a large band of big-horn sheep. "Except their hind parts, they are the colour of the rock. It is startling to be gazing, as you think, at grey rock when suddenly a flock of white objects appear flying from you. They vanish but curiosity often makes them wheel around to have another look at you." The marmot with its

human whistle and the little magpie with its squeak are mentioned, and he notes that "muskeg Tea (Ledum palustrum) makes a capital beverage in absence of a better".

In other entries the physician is to the fore. On July 23, 1859, Pallisser records: "A sick child was brought in to the Doctor who made some mixture out of medicine he had taken with him to the camp; before, however, he had time to give the child anything, one of the medicine men of the tribe, accompanied by his satellites with their drums, rushed into the tent, snatched the child out of the Doctor's hand and commenced drumming and howling. The Doctor told them through Felix, the interpreter that he would not answer for the child who soon afterwards died." Pallisser continues: "July 24, the Indians told us there was a great deal of sickness among them and they requested me to come into their camp and pray for them that the sickness might be removed. I complied and read the general confession and the Lord's Prayer which Felix translated into Blackfoot. A woman brought a child to the Doctor, which was in a fit, and while he was making up some medicine for it, the medicine man who had interfered yesterday came in a similar manner and attempted to take away the child. The mother of the child, aware of the result in the case of the child which occurred yesterday, flew like a tigress on the medicine man and effectually prevented all interference with Hector. The child recovered."

In his final report Capt. Pallisser called attention to "Dr. Hector's great success in his profession, especially among the women and children which called forth astonishment and in most cases deep, though undemonstrative, gratitude." He sums up his officer as follows: "Dr. Hector, whose able assistance and exertions mainly contributed to the success of the Expedition, was most indefatigable, not only during the general exploration seasons, but also during the several winter excursions which he prosecuted on snowshoes, accompanied by dogs drawing provisions on sleighs exposed to the hardships of an almost arctic temperature. During the winter of 1857-8 Dr. Hector mapped the whole of the North Saskatchewan from Carlton to Rocky Mountain House, a distance of almost 9° of longitude." Later writers who have lauded Hector are George M. Grant in "Ocean to Ocean", John Macoun, Col. Sam Steele, John Murray Gibbon and Dan McGowan.

In spite of his success as a doctor to the Blackfeet, Dr. Hector never engaged in practice. On his return to Scotland he received two offers, one to undertake a mission as a political agent and geologist to Kashmir, the other to be geologist to the Provincial government of Otago, New Zealand. On the advice of Sir Roderick Murchison, he chose the latter.

Of his fine work in that dominion, this is not the place to speak. He was honoured by learned societies, became Chancellor of New Zealand University and in 1876 represented New Zealand at the Centenary exhibition at Philadelphia. In 1887 he was created K.C.M.G. He married the daughter of Sir David Munro in 1868 and they had two sons and three daughters. Sir James died in 1906 and Lady Hector in 1930.

There was one further link with Canada. In 1903 he returned with his son Douglas as a guest of the Canadian Pacific Railway. He was in high spirits and laughingly told interviewers that he had come back to see the grave which his men had dug for him at Kicking Horse Pass. Dr. Schäffer, the Alpinist and his wife were at Field and saw the two frequently. Shortly after his arrival the boy took sick. Dr. Schäffer was much concerned fearing he had appendicitis. The boy was taken to Revelstoke hospital where he died. A granite block from the same granite as that placed at the Great Divide to commemorate his father's work was erected over the grave. Sir James returned to New Zealand at once.

This is the story of a man who at the start of his career spent less than four years in what is now Canada and yet made great and enduring contributions by extending knowledge of the vast country which he traversed.

Grateful acknowledgment is made to Mr. H. S. Patterson, K.C. of Calgary whose article in the *Historical Bulletin* of the Calgary Associates is most informative; to Miss Jean Parker of Winnipeg for reprints of Mrs. Elizabeth Parker's (her mother) researches on Rocky Mountain explorers; to officers of the Canadian Pacific Railway; and especially to Mr. J. L. Johnston, librarian of the Provincial Library, Winnipeg, where the book of the Pallisser Expedition and other works were available for perusal.

MEDICO-LEGAL

WHAT PRICE MEDICO-LEGAL SAFETY?

T. L. FISHER, M.D., *Ottawa*

AMONG DOCTORS two beliefs, both wrong, seem to be widely held. One is that unless a doctor is wrong he will not be sued. The other is that suit under those circumstances means successful defence with negligible costs.

It must be borne in mind that a doctor may have suit threatened or brought against him, not because he was wrong, but because the patient thinks he was wrong. It should be remembered, too, that unless the doctor defends himself he may have a judgment rendered against him and damages awarded. It should be realized that the defence of a nuisance suit may be as expen-

*Secretary-Treasurer Canadian Medical Protective Association.

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sive as the defence of a justifiable claim. The following case is an illustration.

In January, 1947 a patient was admitted to hospital in a large Canadian city to the service of a surgeon. Her history revealed that in 1944, under another doctor at another hospital, she had had a hysterectomy and cholecystectomy after which she developed symptoms that suggested a stone in the common bile duct. After consultation with the chief surgeon of the hospital it was decided to explore the common duct. No stone was found but the duct, kinked and adherent, was freed from a mass of scar. The patient's postoperative course was uneventful and she was discharged from hospital one month after admission. Soon after her return home she developed more pain and four months later was admitted to another hospital. In the meantime she claimed she had passed a piece of rubber tubing by rectum and the surgeon who had done the exploratory operation was threatened with suit. The rubber tubing, it was claimed, had been submitted to a city laboratory for examination where, it was implied, its nature was confirmed.

Not for a year was any further action taken and then the surgeon received a lawyer's letter claiming damages in the amount of $22,324.60. A month after the letter was received a writ was issued.

During the time the patient was under the care of the surgeon there was some evidence that she was psychotic. More appeared during her next admission to hospital. In court at the examination for discovery a story of a number of operations, some previous to the time the surgeon explored the common duct, some afterward, was brought out and the inconsistencies of the patient's story brought some certainty to the idea of a psychosis. Nevertheless, the patient insisted that suit proceed, so it was necessary to prepare as careful a defence for the doctor as though the complaint were grounded in reality. This involved interviewing many doctors who had seen the patient, preparation to examine various hospital records, many interviews with the surgeon and all the other details necessary for a sound defence.

Over the next two years various delays occurred but finally a jury was chosen and the case was set down for trial in January, 1951, four years after the operation.

About a week before the case was to have come to trial the plaintiff's lawyer suggested a settlement for 50% of the amount claimed in the writ. When that offer was refused 25% was suggested and when similarly that was refused the amount requested was reduced to $1,000. Finally the plaintiff agreed to allow the case to be dismissed if her lawyer's fees were paid.

Such an impasse is not uncommon in cases of this kind. There is no reason why the doctor should have to pay part of the expenses incurred by the plaintiff in bringing an unjustified action against him, yet to refuse any payment at all on the ground that the doctor is completely innocent is to be faced with a trial which often costs more than the small amount demanded. It seems that most cases of this kind are brought by people who cannot afford to pay their own costs, so none of the greater costs of the trial can be recovered by the doctor even when they are awarded him by the court. Under such circumstances the Canadian Medical Protective Association very often is willing to assume, and advises its member that it should be allowed to assume, responsibility for payment of some small part of the plaintiff's expenses. There must, however, be no settlement; the plaintiff must allow the action against the doctor to be dismissed. So it was in this case. The action against the doctor was dismissed by a Chief Justice in the presence of the plaintiff.

This is the kind of case that, in the opinion of many doctors, can never happen.

It was baseless, fanciful and absurd. The rubber tube the patient said she passed was a figment of her own disordered imagination. Yet she, and any other individual who chooses, can bring suit against a doctor. The courts have no way of weighing the merits of cases until they are tried, and to decide they are nuisance suits they must be tried. As long as all are to have free access to courts of justice there is no way of preventing some cases like this one. The costs in this case are fairly representative of the cost of preparing a defence, $1,332.85. To these would have to be added, had it been necessary for the case to go to trial, the costs of a day or days in court and this might have added another $1,000. In the experience of the Association this is not an unusual amount to have to pay for the successful defence of members.

Thus, doctors who have done competent work may be sued in spite of that fact by persons who think the work was incompetent and the costs of defence may be as great as if the doctors were wrong. He is a foolhardy doctor who has not insured himself some form of assistance against malpractice actions.

The Canadian Neurological Society.—The fourth Annual Meeting of the "C.N.S." will be held at the Banff Springs Hotel, Banff, Alberta, on Sunday, June 8, and Monday, June 9, 1952. The Scientific Program will include a Panel Discussion on "Diagnosis and Treatment of Cerebrovascular Anomalies", and a Symposium on the Sensorimotor Cortex.

Guest speakers will be Drs. F. M. R. Walshe and Macdonald Critchley, of London. Dr. Walshe will speak on "Some Problems of Method in Neurological Research" and Dr. Critchley will speak on "Parietal Lobe Symptomatology". Visitors will be welcome.

ASSOCIATION NOTES

Preliminary Program

Canadian Medical Association

EIGHTY-THIRD ANNUAL MEETING

BANFF, JUNE 9 – 13, 1952

President—Dr. Harcourt B. Church, Aylmer, Que.
President-Elect—Dr. Harold Orr, Edmonton.
General Secretary—Dr. T. C. Routley, Toronto.
Deputy General Secretary—Dr. A. D. Kelly, Toronto.

(This meeting is held in conjunction with the 47th Annual Meeting of the Alberta Division.)

Arrangements for the Eighty-third Annual Meeting to he held in Banff, Alberta during the week of June 9 are proceeding satisfactorily. General Council will meet on Monday and Tuesday, June 9 and 10. A series of Round Table Conferences has been arranged for the mornings of Wednesday, Thursday and Friday, from 9.15 a.m. until 10.30 a.m., to be followed by General Sessions. There will be sectional meetings and sessions of a more general nature on the afternoons of Wednesday and Friday. The Annual General Meeting will be held on Wednesday evening, June 11, at 8.30 o'clock. On this occasion the retiring President, Dr. Harcourt B. Church, will hand over the badge of office to Dr. Harold Orr.

Wednesday, June 11, 1952

ROUND TABLE CONFERENCES

9.15 a.m.

Ante-Partum Hæmorrhage in the Third Trimester.
Dr. T. R. Clarke, Edmonton.

Burns.
Dr. A. R. Tilley, Toronto.

Rheumatic Fever in Children.
Dr. Howard Spohn, Vancouver.

The Place of Preventive Medicine in General Practice.
Dr. F. W. Jackson, Ottawa.

GENERAL SESSION

10.45 a.m.

Valedictory Address.
Dr. Harcourt B. Church, Aylmer, Que.

The Present Status of Anti-coagulants in Thrombo-embolic Disease.
Dr. E. S. Mills, Montreal.

The Blackader Oration.
Dr. R. W. B. Ellis, Edinburgh.

Session A

2.00 p.m.

Consideration of the Retroverted Uterus as a Normal Position.
Dr. Irving A. Perlin, Halifax.

Recent Advances in Pædiatrics.
Dr. Charles Read, Winnipeg.

The Relationship of Immunization Procedures to Poliomyelitis.
Dr. A. J. Rhodes, Toronto.

Diagnosis and Treatment of Leucorrhœa.
Dr. George B. Maughan, Montreal.

Session B

2.00 p.m.

The Early Diagnosis and Treatment of Breast Tumours.
Dr. James W. R. Rennie, Winnipeg.

The Management of Complications in Biliary Tract Surgery.
Dr. C. H. Crosby, Regina.

The Treatment of Hernia.
Dr. E. E. Shouldice, Toronto.

Lung Abscess.
Dr. Jacques Bruneau, Montreal.

SECTIONAL MEETINGS

Section of Anæsthesia

2.00 p.m.

Anæsthesia for the Patient with a Complicating Disease or Condition.
Dr. E. A. Gain, Edmonton.

Spinal Anæsthesia in General Practice.
Dr. R. J. Fraser, Hamilton.

Anoxia.
Dr. W. M. Hall, Vancouver.

Local Anæsthesia for the Upper Extremity.
Dr. R. P. Douglas, Calgary.

Section of Psychiatry

Present Day Trends in Regulations Governing Admission to Psychiatric Hospitals.
Dr. R. R. MacLean, Ponoka.

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The Place of the Psychiatrist in the Community Medical Service.
Dr. R. O. Jones, Halifax.

Stress Dynamics in Psychiatric Perspective.
Dr. H. E. Lehmann, Verdun.

Mental Hygiene in a Health Unit.
Dr. H. Siemens, Edmonton.

Section of Radiology

Treatment of Hæmangiomata.
Dr. Jean Bouchard, Montreal.
Dr. Carleton B. Peirce, Montreal.

The Significance of Solitary Shadows in the Chest Film.
Dr. A. Turnbull, Vancouver.

Osteoid Osteoma.
Dr. K. F. MacEwen, Toronto.

How the Radiologist can Co-operate in the Management of the Long Intestinal Tube.
Dr. R. A. Macpherson, Winnipeg.

Thursday, June 12, 1952

ROUND TABLE CONFERENCES

9.15 a.m.

The Place of the General Practitioner in Industry.
Dr. Gordon A. Sinclair, Toronto.

Acute Upper Respiratory Infection in Children.
Dr. J. Harry Ebbs, Toronto.

Recent Advances in Treatment of Prostatic Carcinoma.
Dr. John Balfour, Vancouver.

Fractures and their After-Care in General Practice.
Dr. Leslie Black, Toronto.

GENERAL SESSION

10.45 a.m.

Applied Psychiatry in General Medicine.
Dr. Franklin Ebaugh, Denver, Colo.

Simple Measures in the Prevention and Treatment of Asphyxia Neonatorum.
Mr. G. F. Gibberd, London, England.

Alcoholism.
Dr. Gordon Bell, Northmount, Ont.

THURSDAY AFTERNOON FREE FOR RECREATION

Friday, June 13, 1952

ROUND TABLE CONFERENCES

9.15 a.m.

The Place of the Physician in Civil Defence.
Dr. R. MacGregor Parsons, Red Deer.

Chronic Diarrhœa in Adults.
Dr. J. Wendell MacLeod, Saskatoon.

Pancreatitis.
Dr. Hugh Stuart, Calgary.

When is an Ovarian Cyst Really a Surgical Problem?
Dr. Brian D. Best, Winnipeg.

GENERAL SESSION

10.45 a.m.

Appendicitis.
Dr. Campbell Gardner, Montreal.

Recent Advances in Dermatology.
Dr. George Lewis, New York.

Evaluation of Newer Drugs in the Treatment of Peripheral Arterial Disease.
Dr. R. B. Kerr, Vancouver.

Session A

2.00 p.m.

Evaluation of Liver Function.
Dr. R. E. Bell, Edmonton.

Recent Advances in Radiotherapy.
Dr. Ivan H. Smith, London.

Diagnosis and Treatment of Headache.
Dr. R. K. Thompson, Edmonton.

Radioactive Isotopes in Medicine.
Dr. John Gemmell, Winnipeg.

Session B

Use and Misuse of the Walking Plaster Boot.
Dr. O. Rostrup, Edmonton.

Experience with Carcinoma of the Large Bowel.
Dr. C. W. Harris, Toronto.

Management of Closed Head Injuries.
Dr. G. K. Morton, Edmonton.

The Diagnosis and Treatment of Polypi of Colon and Rectum.
Dr. J. L. Petitclerc, Quebec.

SECTIONAL MEETINGS

Armed Forces Medical Section

2.00 p.m.

Defence Medical and Dental Services Advisory Board.
Dr. E. A. McCusker, Ottawa.

The Defence Research Medical Laboratories—Their Character and Opportunities.
Dr. M. G. Whillans, Toronto.

Medical Services in Korea.
Major E. H. Anderson, R.C.A.M.C.

Progress Report, the Medical History of the War.
Dr. W. R. Feasby, Toronto.

Section of Historical Medicine

History of Specialism and its Implications for Today.
Dr. H. E. Rawlinson, Edmonton.

Early Medical Education in North America.
Dr. H. E. MacDermot, Montreal.

Dermatologic Commentary in English Literature.
Dr. D. E. H. Cleveland, Vancouver.

Early Medical Explorers in the Rockies.
Dr. D. A. McKenzie, Banff.

Section of Ophthalmology and Otolaryngology

Orbital Complications of Sinus Infection.
Dr. K. A. C. Clarke, Edmonton.

Cortisone in the Treatment of Eye Disease.
Dr. H. L. Ormsby, Toronto.

Hoarseness.
Dr. D. S. Gorrell, Calgary.

The Care of the Eyes of the Newborn.
Dr. E. F. Foy, Edmonton.

THE CANADIAN ANÆSTHETISTS' SOCIETY

The Canadian Anæsthetists' Society announce the following program for their annual general meeting at Banff, June 9 and 10, 1952.

MONDAY, JUNE 9, 1952

9.30 a.m. – Round Table – *Anæsthesia for Cardiac Surgery.*
Chairman–Dr. Louis Lamoureux, Montreal.

10.30 a.m. – Break.

11.00 a.m. – *The Use of Hexamethonium Induced Hypotension During Anæsthesia.*
Dr. K. W. Langston, Vancouver.

11.30 a.m. – *Anæsthesia for Cleft Palate and Hare Lip.*
Dr. Ivan Junkin, Toronto.

2.00 p.m. – *Cyclaine: A New Local Anæsthetic.*
Dr. F. Hudon and Dr. J. P. Dechêne, Quebec City.

2.30 p.m. – *Succinylcholine: A New Approach to the Production of Muscular Relaxation in Anæsthesiology.*
Dr. Francis F. Foldes, Pittsburgh, Penna.

3.00 p.m. – Break.

3.30 p.m. – *The Anæsthetist and the Bronchoscope.*
Dr. R. A. Gordon, Toronto.

4.00 p.m. – *A Report on Anæsthesia in a non-University Centre.*
Dr. John Kyles, Hamilton.

TUESDAY, JUNE 10, 1952

9.30 a.m. – Round Table–*The Teaching of Anæsthesia.*
Chairman–Dr. S. M. Campbell, Toronto.

10.30 a.m. – Break.

11.00 a.m. – Annual General Business Meeting.

2.00 p.m. – *Servel or Feed-Back Controls in Anæsthesia.*
Dr. Harold V. Rice, Edmonton, Alberta.

2.30 p.m. – *Abdominal Pain.*
Dr. F. A. Walton, New Westminster, B.C.

3.00 p.m. – Break.

3.30 p.m. – *The Anæsthesiologist as a Consultant in the Diagnosis and Prognosis of Peripheral Vascular Disease.*
Dr. H. B. Graves, Vancouver.

4.00 p.m. – *Clinical Experiences with Block Therapy in Cerebral Accidents.*
Dr. H. A. Kester, Vancouver.

CANADIAN HEART ASSOCIATION, INC. SOCIETE CANADIENNE DE CARDIOLOGIE

Canadian Heart Association, Inc. Société Canadienne de Cardiologie 5th Annual Meeting Tuesday, June 10, 1952, Chateau Lake Louise.

9.00 a.m. – Annual Business Meeting.

SCIENTIFIC SESSION

10.00 a.m. – *Embolic Occlusion of Patent Foramen Ovale.*
R. E. Beamish, M.D., Winnipeg.
George B. Elliott, M.D., Winnipeg.

10.20 a.m. – *Problems with a Heart Lung Machine.*
A. L. Chute, M.D., Toronto.

10.40 a.m. – *Isolated "U" Wave Negativity.*
J. H. Palmer, M.D., Montreal.

11.00 a.m. – *Arteriosclerosis Panel Discussion.*
J. B. Firstbrook, M.D., Toronto.
John Lewis, M.D., London, Ont.
F. G. Elliott, M.D., Edmonton.

12.30 p.m. – Luncheon.

2.00 p.m. – *Clinico-Pathological Study of Idiopathic Cardiomegaly in Infants.*
A. L. Johnson, M.D., Montreal.
F. W. Wiglesworth, M.D., Montreal.
Charlotte Ferencz, M.D., Montreal.

2.20 p.m. – *Heart Sounds of Right and Left Bundle Branch Block.*
Harold N. Segall, M.D., Montreal.
Allan Sharp, M.D., Montreal.

2.40 p.m. – *The Results in Treatment of 30 Cases of Mitral Stenosis by Commissurotomy.*
Paul David, M.D., Montreal.

3.00 p.m. – *Hypertension Panel Discussion.*
Kenneth Evelyn, M.D., Montreal.
D. B. Moran, M.D., Toronto.
George F. Strong, M.D., Vancouver.
D. G. McQueen, M.D., Calgary.

All members of the Canadian Medical Association are cordially invited to attend the Scientific Session at Chateau Lake Louise.

- NOTICE -

TRAIN TRAVEL TO BANFF

By arrangement with the Canadian Passenger Association, a special convention fare for rail travel is available to members and their families proceeding to the Annual Meeting at Banff.

For the convenience of those planning to attend only the latter part of the meeting, the dates of departure shown in the March issue have been amended as follows:

From Stations on Western Lines (*i.e.*, all points west of Fort William and Armstrong, Ont.)–June 1 to 10.

From Stations on Eastern Lines (*i.e.*, Fort William and Armstrong, Ont. and all points east thereof except Newfoundland)–May 29 to June 9.

From Stations in Newfoundland–May 26 to June 5.

Members are urged to make reservations for rail travel at an early date. Identification certificates permitting members to purchase tickets at a considerable saving may be obtained on application to the General Secretary, Canadian Medical Association, 135 St. Clair Ave. West, Toronto 5, Ont.

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SECTION OF GENERAL PRACTICE

THE EXECUTIVE of the Section of General Practice held a meeting in Toronto on March 6 and 7. It included, however, more than the executive. There were several provincial hospital and university representatives, guests and observers. Under the able chairmanship of Dr. W. V. Johnston discussion was abundant and no one could complain of not being allowed to present his viewpoint.

It was perhaps characteristic of the whole subject of general practice that so many who were not general practitioners showed such genuine interest in the problems of the general practitioner. It may be said too that this interest augurs well for the future work of the Section itself.

The program was carefully planned. There were first short addresses of welcome by Dr. Harcourt Church, President of the Canadian Medical Association, and Dr. Harris McPhedran, Chairman of Council, both men of wide and rich experience.

The main paper of the first morning was by Dr. G. E. Hall, President of the University of Western Ontario, on "Undergraduate Training for General Practice". This paper is being published in the Journal. It should be read by every kind of practitioner, for it deals with medical education, the subject which, to paraphrase Mark Twain's comment, is like the weather; everyone talks about it, but very few do anything about it. Dr. Hall showed in his clear and forceful style just what difficulties there are nowadays in carrying on medical education, and the peculiar difficulties in regard to general practice. He brought out one point which was to be a recurring theme throughout the two days' symphony of discussion, namely, the necessity for identifying those general practitioners who show that they are trying to make the most of their opportunities; in short, a "yardstick" by which merit might be recognized.

Dr. Hall freely admitted that he did not have the answers to many important questions, but on the other hand he showed that he has not met with the co-operation he has wanted amongst general practitioners in his efforts to find out what they think about fitting medical education to the needs of general practice.

In the afternoon Dr. T. J. Quintin of Sherbrooke described the working of a plan whereby interns spend a certain time in training both in Sherbrooke hospitals and in actual daily general country practice. The plan embraces the best elements of the old apprenticeship system and Dr. Quintin was enthusiastic in its development.

The second day began with a discussion on Departments of General Practice in Hospitals, led by an address by Dr. D. S. Lewis, Past President of the Royal College of Physicians and Surgeons of Canada. Dr. Lewis spoke at length in careful appraisal from the point of view of the Royal College of the formation of a department of general practice in hospitals. He pointed out first that the College was interested in anything which improved the practice of medicine. For example, certification, which engaged so much of the energy of the College, had improved the quality of service to the public. The College, Dr. Lewis stated, had said that it was not against the setting up of a department of general practice in hospitals. It was felt that it was outside of the province of the College to take a stand on the policy of the introduction of such departments: if the requirements of the College were met, there would be no intervention on its part. The requirements of the College for approval of a service for special training, in brief, were: (a) That it should be a service in a standard ward; (b) The number of patients admitted to the service should be at least 400 in a year; (c) The doctor in training should receive adequate instruction from the staff and be given opportunity to gain experience; (d) Certification is required for those in actual charge of the service, but is not an essential for other members of an approved service. So long as these conditions were met, it was all that the College required for its approval of the hospital. A more definite statement was difficult to make because no plan was as yet in operation in Canada for the functioning of a department of general practice in a hospital. The College would be sympathetic towards the development of any plan which would meet these requirements.

The details of organization of the Section occupied much time especially in committee evening meetings. Full reports of this will be given at the Annual Meeting in June.

The meeting fully justified the effort made to hold it. More was accomplished than may have been apparent; conditions do not permit of rapid progress, indeed the very deliberation in action may be desirable.

MEDICAL SOCIETIES

Société Canadienne d'Histoire de la Médecine
Rapport des activités depuis sa fondation

Après des pourparlers préliminaires, notre Société était officiellement fondée le 24 octobre 1950 et les premiers officiers élus furent les suivants: président d'honneur, Dr Charles Vézina; président, Dr Sylvio Leblond; 1er vice-président, M. l'abbé Arthur Maheux; second vice-prés., Dr Charles-Auguste Gauthier; assistant-secrétaire, Dr Jean-Thomas Michaud.

La Société qui date d'un peu plus d'un an a déjà été connue sous plusieurs noms: tout d'abord, la Société d'Histoire des Sciences médicales au Canada. Puis, la Société d'Histoire de la Médecine et, enfin, Société canadienne d'Histoire de la Médecine. Son siège social est à Québec. Ses réunions sont mensuelles, se tiennent habituellement chez les Anciens de Laval et ses travaux, grâce à la collaboration du Professeur Rosaire Gingras, paraissent dans le Laval Médical qui en assume le coût.

Depuis la réunion préliminaire, les membres se sont réunis réglièrement douze fois, jusqu'à cette année: soit quatre séances en 1950 et huit en 1951.

A ces différentes réunions, des travaux ont été présentés, soit:

M. l'abbé Arthur Maheux et M. Charles-Marie Boissonnault ont donné un plan de la Monographie de l'histoire de la Faculté de Médecine de l'Université Laval;

M. l'abbé Arthur Maheux a fait des commentaires sur 350 nouvelles fiches de Médecins ayant pratiqué sous les régimes anglais ou français et dont les noms ne figurent pas dans Ahern;

M. Marius Barbeau a raconté quelques souvenirs personnels sur les Indiens du Canada, touchant certaines coutumes de pratique médicale;

M. Antonio Drolet a fourni une bibliographie des ouvrages intéressant la Médecine et faisant partie de la bibliothèque générale de l'Université Laval;

le Docteur Charles-Auguste Gauthier a parlé du "Traitement de l'insanité il y a cent ans".

M. Luc Lacoursière a traité des "Arrêteurs de sang";

M. Charles-Marie Boissonnault, des "Médecins patriotes" de 1837-1838;

le Docteur Sylvio Leblond a fait la "Biographie de James Douglas";

le Docteur Emile Gaumond a parlé des "Epidémies de petite verole et de leur traitement, il y a deux cents ans";

enfin, M. Charles-Marie Boissonnault a fait la Biographie d'Adam Mabane".

Au cours des réunions, diverses questions ont été à l'ordre du jour. C'est ainsi qu'on a décidé la fondation d'un musée d'Histoire de la Médecine. Son local est pour l'instant à la Faculté de Médecine où seront reçus tous les papiers ou objets pouvant intéresser l'historien de la Médecine.

Dès ses débuts, la Société s'est attachée un publiciste dans la personne de Monsieur Charles-Marie Boissonnault.

Signalons que, ce cinq membres qui assistaient à la première réunion, la Société a grandi et compte maintenant quarante membres, répartis comme suit: membres actifs, 27; membres correspondants, canadiens 8; français 3; américains 2.

Le Docteur Sylvio Leblond, président fondateur, ayant été appelé par ses nouvelles fonctions hors de Québec, le Bureau de direction s'est reconstitué comme suit, ayant également à remplacer le Docteur Pierre Jobin, secrétaire démissionnaire: président d'honneur, Dr Charles Vézina; président, Dr Charles-Auguste Gauthier; vice-président, Dr Emile Gaumond; secrétaire, Dr Jean-Thomas Michaud; assistant-secrétaire, Dr Benoit Boucher.

Enfin, signalons que les travaux de la Société ont commencé de paraître dans le *Laval Médical* où le matérial est actuellement en quantité suffisante pour assurer un débit constant à chaque numéro de cette revue.

De toutes ces activités, il reste que la fondation de la Société canadienne d'Histoire de la Médecine est venue à son heure puisqu'elle a réussi à susciter autant de travaux et à réunir une groupe de fidèles.

JEAN THOMAS MICHAUD,
Secrétaire

CORRESPONDENCE

HÆMANGIO-ENDOTHELIOMA OF HEART

To the Editor:

In reading, "Malignant Hæmangio-endothelioma of Heart" (*Canad. M. A. J.* 66: 2: 147 (Feb.) 1952, I noted the authors state . . . "we have been able to discover only 3 such instances recorded in the literature".

In a personal letter to Dr. A. J. Blanchard, I pointed out to him that in an article: Glassy, F. J. and Massey, F. C.: Primary Hæmangio-endothelial Sarcoma of the Heart, *Am. J. Med.*, 8: 4: 544 (Apr.) 1950, we described what we felt was the "fourth malignant hæmangio-endothelioma of the heart reported" in the world literature. That would make the cases mentioned in your journal, numbers five and six.

However, it is my opinion that two other reports additionally should be re-examined before definite numerical assignment shall have been made. One is a case stated to be "endothelioma" in Reisinger, J. A.; Pekin, T. J. and Blumenthal, B.: Primary Tumour of the Inferior Vena Cava and Heart with Hæmopericardium and Alternation of the Ventricular Complexes in the Electrocardiogram, *Ann. Int. Med.*, 17: 995, 1942. This reference was *not* included in Mahaim's tremendous compilation, nor did we notice the omission until we had the pleasure of reading: Whorton, C. M.: Primary Malignant Tumours of the Heart, *Cancer*, 2: 2: 245, (Mar.) 1949. A second equivocal case, although the authors state specifically, "Mitotic figures were nowhere seen", was recorded by Amsterdam, H. J.; Grayzel, D. M. and Louria, A. L.: Hæmangio-endothelio-blastoma of the Heart, *Am. Heart J.*, 37: 2: 291 (Feb.) 1949.

My criticism is rendered totally in the spirit of scientific accuracy and to attempt to assist in tabulating chronologically the various primary tumours of the heart. Obviously, in this as in all fields today, the task of culling the world literature and maintaining currently active and precise enumeration is almost prohibitively difficult.

I wish to congratulate the Journal and the authors for their interest in reporting on a subject which so badly needs definition.

FRANKLIN C. MASSEY,
Associate in Medicine,
Division of Medicine,
Hahnemann Medical College,
Philadelphia 2, Penna.

SPECIAL CORRESPONDENCE

The London Letter

(From our own correspondent)

GENERAL PRACTITIONERS' PAY

In 1946 the Government appointed a committee, under the chairmanship of Sir William Spens, to make recommendations as to the remuneration of general practitioners under the National Health Service. The recommendations of this committee, which were based upon the estimated incomes of general practitioners in 1939 plus a "betterment factor" correlated principally with the change in the value of money, were accepted by the Government, and it was on this basis that the general practitioners of the country, as represented by the British Medical Association, decided to enter the Service in 1948.

Under the National Health Service general practitioners are remunerated from what is known as a "central pool", and Mr. Aneurin Bevan, Minister of Health at the time of the introduction of the Service, arbitrarily decided that the size of this central pool should be based upon a betterment factor of 20% on net incomes. This figure the British Medical Association refused to accept, and the subsequent four years have witnessed a bitter and protracted controversy between the two parties. It was not until Mr. Bevan was succeeded as Minister of Health by Mr. Marquand that a more reasonable spirit entered into the negotiations, and last year Mr. Marquand made an offer to submit the problem to arbitration, the adjudicator to be nominated by the Lord Chancellor. This offer was accepted by the British Medical Association, and Mr. Justice Danckwerts was appointed as adjudicator. Both the British Medical Association and the Minister of Health bound themselves to accept the award of the adjudicator, and at the same time a working party was set up to formulate a revised plan of distribution of the central pool.

Mr. Justice Danckwerts has now made his award. This is based upon a betterment factor of 100% as compared

with 1939 figures. This award has already been accepted by the Minister of Health on behalf of the Government. It will involve an addition of approximately £10,000,000 to the central pool for the year ended March 31, 1951. The award is retrospective, and it is estimated that back payments of remuneration will amount to about £30,000,000. This sudden addition of £40,000,000 to the national health bill will undoubtedly be an embarrassment to the Government in these days of financial stringency, and there are already signs of the opposition making political capital out of it.

As *The Times* points out, however, "The B.M.A. has secured not an improved standard of earnings for doctors but an impartial definition of the supposedly agreed standard according to which doctors were to have been paid from the first day of the health service". The same view, in rather franker terms, is expressed by *The Manchester Guardian*: "This is one of Mr. Bevan's pigeons coming home to roost. He kept staving off the adjudication; if it had been made earlier the arrears would have been less."

Satisfactory though the award undoubtedly is, it still leaves unsolved the series of difficult problems involved in the revised distribution of the central pool. This will call for high powers of statesmanship and vision. The stakes are high—they are nothing less than the success or failure of the National Health Service.

LEONARDO DA VINCI

To commemorate the quincentenary of the birth of Leonardo da Vinci, an exhibition, organized jointly by the Royal Academy of Arts and the Science Museum, is being held at Burlington House. It provides a fascinating panorama of his versatile genius—as artist, anatomist, scientist and engineer. The large selection of his anatomical drawings are beautiful examples of his outstanding gifts. Although some of them demonstrate a curious blend of traditional Galenic teaching and acute personal observations, others are noteworthy for their originality and accuracy. These latter features are most outstanding in the drawings of the heart. He clearly demonstrates that the human heart has two atria as well as two ventricles, and his drawings of the action of the aortic valve are striking examples of scientific experimentation. Equally impressive is his drawing of the right ventricle of the heart in which the moderator band is prominently shown stretching across the cavity.

The science section of the Exhibition includes models of an aeroplane, a helicopter and a parachute constructed in accordance with Leonardo's drawings. Another fascinating exhibit in this section is the sketch of a "hydraulic alarm-clock" described by Leonardo as follows: "This is a clock to be used by those who grudge the wasting of time. And it works thus: when as much water has been poured through the funnel into the receiver as there is in the opposite balance, the balance rises and pours its water into the first receiver; and this being doubled in weight jerks violently upwards the feet of the sleeper who is thus wakened and goes about his business". No doctor who happens to be in, or passing through London can afford to miss this unique exhibition.

WILLIAM A. R. THOMSON

London, April, 1952.

OBITUARIES

DR. REGINALD S. ABELL, aged 52, a medical practitioner for years in Owen Sound died on February 23 at St. Michael's Hospital, Toronto. He had been a member of the staff of the Gage Institute, Toronto, since October, 1950.

A native of Owen Sound, Dr. Abell was a gold medalist graduate in medicine from the University of Toronto and took postgraduate work in the United States. He retired from practice in Owen Sound because of ill health. Surviving is his widow.

DR. WILLIAM J. BROWN, well-known London, Ont., surgeon and golfer died on March 5 at Victoria Hospital following a three-month illness. He was 73. With his death the city lost a sportsman and doctor who for more than a quarter of a century has been revered by friends, medical associates, golfing associates, and medical students.

Dr. Brown, an eye, ear, nose and throat specialist, was also well-known in educational circles, having served on the faculty of the University of Western Ontario Medical School from 1921 to 1948 and the Victoria Hospital School of Nursing teaching staff for over 25 years.

Born at Woodville, near Lindsay, in 1878, Dr. Brown attended Lindsay Collegiate Institute and in 1901 graduated from Trinity Medical College, University of Toronto. During World War I he served overseas with the C.A.M.C. at Shorncliffe Hospital, Folkstone, England, returning to Canada with the rank of major. He began his practice in London in 1921. Surviving are his widow and one son.

DR. J. G. BURROWS, aged 85, a native of Bath, died on March 5 at his home in Belleville, Ont. He had been ill for the past year. Dr. Burrows graduated in medicine from Queen's University in 1891. He practised in Marlbank until 1934 and then moved to Tweed. Four years ago he retired to Belleville. He was a member of the Presbyterian Church and of Tamworth Masonic Lodge.

Surviving are his widow and two sons.

DR. CLAIRE J. COUNTRYMAN, well known in the Belleville, Ont. district where he spent most of his life, died on February 29 in Birmingham hospital, Selma, Alabama, where he had undergone an operation. Dr. Countryman was born at Tweed. He attended Belleville Collegiate and graduated in medicine from Queen's University in 1938, commencing his practice at Leaside. During the last war he was a member of the R.C.A.M.C. and served in Canadian hospitals. After the war he resumed his practice at Leaside and did postgraduate work as a surgeon in Edinburgh. Surviving are his widow and three small sons.

DR. EDGAR NESBITT COUTTS, aged 77, former superintendent of the Freeport Sanatorium, Kitchener, Ont., died on February 18 from a coronary thrombosis. Retired, he had lived for several years in Toronto. Dr. Coutts was born in Kent County in 1874. He was educated in Chatham Collegiate and University of Toronto from which he graduated with an M.B. in 1900. His postgraduate study was in Liverpool and Glasgow until 1905, when he returned to Canada and in practice in Agincourt until 1915. He served in the First Great War 1915-1916, in the Salonika area, where he developed pulmonary tuberculosis.

In 1921 he came to Freeport Sanatorium—an old farm house, a few huts and twenty-four patients. As Medical Superintendent, the Sanatorium developed under his careful guidance to a modern hospital of 158. The beautification of the grounds with lawns and reforestation areas overlooking the Grand River, will remain a perpetual monument to his memory.

He was a keen and indefatigable worker in the antituberculosis field, stressing need of contact examinations, school surveys and chest x-rays for industrial workers. He was a great man, loved by his patients and associates alike. He leaves two daughters.

DR. ANGUS A. DRINNAN, Ponoka's first medical doctor, died in the Three-Way hospital in Rimbey, Alta., January 29, at the age of 86. Dr. Drinnan was born in Ontario and came to Manitoba with his family at the age of 14. He was a teamster in the Riel Rebellion in 1885 and later attended Trinity College, where he secured his medical degree.

His first practice was in Ponoka, Alta. in 1901 and he remained here for several years before going to Africa. For 25 years he was C.P.R. doctor at Outlook, Sask., with the exception of 2½ years which he served overseas with the 10th Field Ambulance as Captain. He was later

awarded the Military Cross. He retired in 1935, and returned to Ponoka. Besides his widow he is survived by two sons.

DR. ROBERT C. HASTINGS, aged 60, director of pathology at Jeffrey Hale's Hospital, Quebec City, died on March 21 after a short illness. A native of Constable, N.Y., Dr. Hastings studied at Dartmouth University and McGill University where he graduated in medicine. He served in the Canadian Army during the Second World War. He was widely known as a naturalist and for studies of Eskimo health conditions. He is survived by his widow.

DR. WILLIAM DAVIDSON LAMBLY, Montreal, Que., died on March 6 in Montreal. He was 84 years of age. Born at Inverness, Que., Dr. Lambly was educated there and at Cobourg before attending McGill University where he graduated in medicine in 1896. He practised in his home town for some years and in 1909 came to Montreal where he established a general practice, and was appointed by the old Grand Trunk Railway as district medical officer. He was also medical officer for Johnson Wire Works and other firms. Surviving are two sons, and two daughters.

DR. LIONEL E. LIMOGES, physician and surgeon of Penetang, Ont., died suddenly at his home on Water Street on February 13. He was 43. Dr. Limoges underwent a serious operation last year and had been in poor health ever since. Born in North Bay he was educated at St. Jerome's College, Kitchener, and graduated with high honours from Queen's University. He was an active member of the Knights of Columbus since its reorganization after the war and was a member of Penetang Hospital Board. He is survived by his widow and three children.

DR. ALEXANDER HOWARD MacCORDICK died on February 16 at his home in Richmond, Ont. He was 73. He had been retired from his practice for more than 15 years. Born near Richmond he graduated from McGill University in medicine in 1908 and was a house surgeon and then assistant pathologist in Montreal General Hospital. He studied for two years in German and English medical centres on a scholarship and returned to Montreal in 1914 where he was engaged in war services as a bacteriologist for the government until the end of the First World War. For nearly a quarter of a century he had been on the McGill University faculty, and was an attending physician at the Montreal General Hospital for 20 years. He had been president of the St. James Literary Society of Montreal, councillor of the Art Association of Montreal, councillor of the Antiquarian Society of Montreal, and president of the Royal Astronomical Society of Montreal. He was a member of the Royal College of Physicians and Surgeons. Surviving are his widow and one son.

DR. WILLIAM CECIL McKECHNIE of Vancouver, B.C., died on February 22 in St. Paul's Hospital. He was 78. In true keeping with the "family practitioner" type of doctor, Dr. McKechnie knew all his patients by name, their family history and troubles. Born in Port Hope, Ont., he was educated at Winnipeg Collegiate and McGill University. He graduated in medicine in 1899. Following practice in Nanaimo, he came to Vancouver in 1906 and joined the staff of St. Paul's Hospital. He retired in 1946. Despite a strenuous and intensive medical career, Dr. McKechnie found time to be a keen student of biology and natural history. He was a founder of Burrard Field Naturalist Society. He was an honorary life member of Vancouver Medical Association. Surviving are a son and a daughter.

DR. LORETTO O'CONNOR, aged 50, died on February 13 in Toronto. Born in Lindsay, she graduated from Queen's University. After a spell as principal of North Battleford collegiate, Sask., she returned east to attend the University of Toronto's school of medicine. She received her medical degree in 1927 and became director of the Junior Red Cross for Ontario. She is survived by a brother-in-law, Dr. J. S. Huff.

DR. R. K. PATERSON died on February 29 in Ottawa, after a lengthy illness. A man who had won many richly deserved honours in his profession, Dr. Paterson was elected president of the Ontario Medical Association in 1938 and was a past president of the Ottawa Academy of Medicine. Dr. Paterson was born at Greenock, Scotland. He came to Canada and Renfrew as a boy. Following his elementary education at Renfrew schools, he enrolled at Queen's University, graduating in 1906. He then continued his studies abroad for a period of two years, returning to Canada after gaining by examinations the degrees of M.R.C.S.(Eng.) and L.R.C.P. (Lond.).

Dr. Paterson became the first of his profession to practice radiology in Ottawa. He was appointed radiologist at the General Hospital shortly after entering practice. During this period he also became the first practising physician to make use of radium in this area of the province. Surviving besides his widow are one son, and two daughters.

DR. H. ALLISON PAYZANT, aged 79, Dartmouth's medical health officer for many years, died on February 9 following a heart attack. He was born in Dartmouth, N.S. and received his education in the public schools there, at Acadia University, and Dalhousie Medical College.

Dr. Payzant retired from private practice a few years ago but this only served to give him more time for public health work. He became immensely interested in the health of Dartmouth school children and pioneered in immunization work locally. He also gave devoted service to the clinical work of the Victorian Order of Nurses. As town medical health officer he saw at an early date, the need of chlorination plant for the town water supply. Against considerable opposition he persisted in demanding this until it was at last accomplished. He was a former past president of the Nova Scotia Medical Society and a few years ago was honoured by that society for completing 50 years in the medical practice.

LE DR V. RHEAUME est decédé le 21 fevriér à l'âge de 77 ans. Natif de Montréal, le défunt avait fait ses études au séminaire de Ste-Thérèse et à l'Université Laval de Montréal où il avait obtenu son doctorat en médecine en 1899.

Il avait pratiqué ensuite le médecine pendant 40 ans dans la ville de Verdun. Il avait aussi été pharmacien. Echevin de sa ville, il était avantageusement connu dans le monde des sports. Il laisse, outre son épouse, sa fille, et son fil.

DR. C. K. ROBINSON, a native of Kingston, Ont. where he practised medicine since 1921, died at his home. He was 60 years of age. Dr. Robinson graduated from Queen's University in 1912. He practised in Blind River for a short time and in Battersea before returning to Kingston. He was a member of Queen Street United Church. Surviving are his widow, one daughter and one son.

DR. AUSTIN BRYCE SIMES, aged 61, medical supervisor of Indian health services in Saskatchewan since 1948, died on February 6 at Fort Qu'Appelle. He had been associated with Indian health since 1930. Dr. Simes, together with Dr. R. G. Ferguson, former general superintendent for the Saskatchewan sanatoria, had done much to further the treatment and research in tuberculosis among the Indians in Saskatchewan.

Born at Kingston, Ont., Dr. Simes took his M.D. at Queen's university graduating in 1913. He moved to Winnipeg for his internship. During the First World War he enlisted with the medical corps and went over-

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seas in 1916. On his return he went back to Queen's for his master's degree in surgery, and then took up private practice at Abernethy, Sask. While at Abernethy he served as a part-time doctor for the File Hills Indian reservation and then in 1932 was appointed a fulltime doctor with the Indian Affairs department and moved to Fort Qu'Appelle. Besides his widow he is survived by a son.

DR. GEORGE A. SIMMONS, of Ottawa, Ont., died on February 23 after a brief illness. Born at Simmons, Que., in 1885, he had lived in Ottawa for the past 20 years. He graduated from Queen's University in 1912, with a B.Sc. and M.D., C.M. Dr. Simmons served overseas in the First World War with the Royal Army Medical Corps and then with the R.C.A.M.C. He spent some wartime service at Malta and Salonika. Surviving is his widow.

DR. JOSEPH OMER RODOLPHE TANGUAY, died suddenly at his home in Sudbury, Ont., on February 23. A Fellow of the American College of Surgeons, the 57-year-old past president of the medical staff of St. Joseph's Hospital was born in Montreal on November 23, 1894. He was educated in Montreal, graduated from L'Assomption College where he obtained a B.Sc. degree in 1915. He entered the University of Montreal and four years later, he obtained his doctor's degree. He interned in Montreal.

Dr. Tanguay established a practice in Chelmsford in 1920. He moved to Sudbury in 1924 and had practiced in the city ever since. He did postgraduate work in the New York Postgraduate Hospital in 1927 and 1929. He served with the R.C.A.M.C. during the First World War and was stationed in Labrador. He was chief of the urology department at St. Joseph's Hospital and one of the founders and past presidents of the Northern Ontario Historical Society. Surviving are his widow, four sons and four daughters.

DR. HERMON BROOKFIELD VAN WYCK, aged 62, died on March 11 at the Toronto General Hospital. He had been ill for two years. Former head of the department of obstetrics and gynæcology, University of Toronto, Dr. Van Wyck retired in 1950. He was born in St. Catharines, attended Harbord Collegiate and graduated from the University of Toronto in arts and medicine. He held the degree of Fellow of the Royal College of Surgeons (Canada) and Fellow of the Royal College of Obstetricians and Gynæcologists. A fellow in obstetrics and gynæcology at the University of Toronto from 1921 to 1924, he subsequently became junior demonstrator and assistant professor. He was appointed head of the department in 1946. He served in the First World War with the C.A.M.C. in England and Macedonia and held the rank of major. Dr. Van Wyck was a musician and a talented pianist. He was also a painter in oils. He leaves his widow, two sons and a daughter.

DR. AGNES HELEN TOPPING WHITE, aged 53, died on February 13, in Toronto, Ont. She had been ill for several months. On the staff of the Women's College Hospital since 1936, she had engaged in private practice for some years. Dr. White specialized in industrial medicine, welfare service and obstetrics.

Born in Kent, Eng., she was a graduate of the University of London in 1921. She came to Canada a year later with her first husband, Victor Topping, a civil engineer and barrister. Dr. White was corresponding secretary for the Medical Women's International Association for Canada and also held office in the Canadian Federation of Medical Women. She was a member of the University Women's Club, the Toronto branch of the Canadian Red Cross and St. Clement's Anglican Church, North Toronto. She leaves three sons.

ABSTRACTS *from current literature*

MEDICINE

Chronic Constrictive Pericarditis.

DRESSLER, M.: POSTGRAD. MED., 11: 1, 1952.

Mitral stenosis is often mistaken for constrictive pericarditis, and the characteristic diastolic murmur in the mitral area is heard only in mitral stenosis. Roentgenological evidence of pericardial calcification should confirm a diagnosis of constrictive pericarditis. Left auricular enlargement in the absence of coronary heart disease does not always connote mitral stenosis. The co-existence of these two conditions is rare; unequal constriction and the external adhesions (chronic mediastino-pericarditis) may cause chamber enlargement depending on the location of these abnormalities. Marked constriction of the left side causes left auricular and right ventricular enlargement. Complete encasement of the heart will cause a small cardiac silhouette. Congestive heart failure has a shorter history and the patient is much sicker, with dyspnœa at rest and the roentgen cardiac shadow is much enlarged. Primary cirrhosis of the liver with hepatomegaly is ruled out by engorged cervical veins and elevated venous pressures. Polyserositis, tricuspid valvular disease, nutritional and other œdemas and mediastinal tumours are ruled out by the absence of the findings of chronic constrictive pericarditis. An accentuated pulmonic second sound and/or a reduplicated second sound are important in the early diagnosis of constrictive pericarditis. There is a marked inflow stasis due to the inability of the ventricles to expand and fill rather than constriction of the veins and auricles. Following pericardiectomy the functional capacity of the heart is increased in cases that are cured or improved. One or more operations may be necessary to effect total removal of the restricting pericardium and the recovery of cardiac function may be prolonged; frequently marked changes in the E.C.G. do not occur, this is attributed to residual epicardial fibrosis and adjacent myocardial damage. Cardiac catheterization is of great value in diagnosis and aids the surgeon in localizing the site of constriction.

J. A. STEWART DORRANCE

Treatment of Pernicious Anæmia.

PAUL, J. T.: POSTGRAD. MED., 10: 508, 1951.

Liver extract and vitamin B_{12} are the most satisfactory agents for the treatment of pernicious anæmia. Oral administration of liver extract is costly and disagreeable, while intramuscular preparations in strengths of 1, 2, 5, 10, and 15 units/ml. provide the most reliable response. Initially the patient should receive 15 units of liver extract intramuscularly, daily for one week, followed by 15 units three times per week until the blood examination is normal (a return of erythrocyte size to normal by M.C.V.). Response occurs within 48 hours by an increase in the number of reticulocytes, while the red cell count and clinical findings lag for 2 weeks. Treatment is necessary throughout the life of the patient. The usual maintenance dose is 15 units of liver extract every three weeks. Sensitivity may develop (3 to 5%) and if so, vitamin B_{12} should be substituted. Initially 15 mcgm. of vitamin B_{12} should be administered intramuscularly, daily for 1 week and thereafter three times weekly until a complete remission occurs. The response is similar to that of liver extract. Individual maintenance doses are established for each patient. Usually the intramuscular injection of 15 mcgm. of vitamin B_{12} every 15 days will prove satisfactory. 1 mcgm. of vitamin B_{12} is equivalent to 1 u.s.p. unit of liver extract. Larger doses of both agents are required for patients with neurological involvement—15 units of liver extract or 15 mcgm. of vitamin B_{12} intramuscularly three times weekly for 6 months, followed by a maintenance dose

of 30 units of 30 mcgm. weekly. Co-ordination exercises are particularly useful in those who have been disabled for a long period of time. J. A. STEWART DORRANCE

Studies on Antibiotic Synergism and Antagonism: The Interference of Aureomycin, Chloramphenicol and Terramycin with the Action of Streptomycin.

JAWETZ, E., GUNNISON, J. B. AND SPECK, R. S.: AM. J. M. SC., 222: 404, 1951.

Stimulated by the appearance of increasing numbers of organisms resistant to antibiotic agents this author has investigated in previous papers the possibility that selected combinations of these agents at present available might show synergistic features which might aid in overcoming this difficulty. Combinations of penicillin, streptomycin and bacitracin have been shown both *in vitro* and *in vivo* to be more effective against certain organisms than are these agents singly.

In this paper the author investigates the opposite possibility, the likelihood of antagonisms existing between certain antibiotic agents at present in use. It has already been demonstrated that the action of penicillin is interfered with by the presence of chloramphenicol, aureomycin and terramycin and in this present work the inhibitory action of these is shown to extend as an antagonism to streptomycin as well. Following presenting considerable experimental evidence, the author concludes that it is principally because of their bacteriostatic action that this phenomenon of interfering with the action of streptomycin is due. Of the three, chloramphenicol is the most effective in this regard and it is likely that the other two will not prove to be antagonists of much clinical importance. In fact, insofar as both penicillin and streptomycin are concerned, it is possible that the synergistic rather than the antagonistic effects may eventually be of chief practical importance.

G. A. COPPING

Medical Responsibility for Juvenile Delinquency.

BLACKMAN, N.: POSTGRAD. MED., 10: 499, 1951.

The line of demarcation between normal mischief and delinquency is not nearly as clear as it is popularly presumed to be. Every child may be considered a potential aggressor and creates irritation and anger in order to justify his tendency to project on to others his difficulties of growing up, of learning and accepting reality. Many children lash out against society as a result of early disillusionment in their parents, while the influence of the mother can be traumatic as she fluctuates between loving him and hating him. The juvenile committing a homicide is reacting primarily toward what he has considered a mistreatment, a continued irritation or a dictatorial interference in his personal liberties. A generally poor personality organization is shown by children involved in sexual misbehaviour. The girl sex delinquent seeks in her sexual activities a reassurance for the inability to compete with the other girls. The boy delinquent seeks recognition in performing acts involving muscular strength, daring and competitiveness. Early traumatic experiences such as broken homes and lack of emotional strength within the family are important factors in the formation of antisocial patterns of behaviour.

Juvenile delinquency is a mirror of the cynicism of our culture. It is not a phenomenon apart from us. It is a problem in prevention, supervision, and eradication and cannot be relegated to law enforcement agencies alone. The whole community is responsible in understanding, planning, and execution. The gap between what is known about motivation in delinquency, and what is applied in the courts, when they attempt to ascertain responsibility for these conditions will not be closed until the community as a whole becomes cognizant of the advances which have been made in the field of psychiatry toward understanding the causation of juvenile delinquency. J. A. STEWART DORRANCE

Selecting the Proper Treatment for Hyperthyroidism.

KELSEY, M. P.: *Postgrad. Med.*, 10: 504, 1951.

With proper choice of therapy the mortality rate for hyperthyroidism is being reduced almost to zero. Thyroidectomy is still the method of choice for patients with uncomplicated hyperthyroidism. Operation is the only one with a proved record of long-term high success, and it still has the best record for immediate results. The disease is readily controlled and the patient is in hospital 4 to 6 days and returns to work in 2 to 4 weeks. There are few complications and there is a minimum of follow-up therapy. Iodine is rarely curative and is used as a supplementary agent in treating hyperthyroidism. Postoperatively iodine is used to protect against recurrence of hyperthyroidism in diffuse toxic goitre (15 drops per day for 3 months; 5 drops per day for the next 9 months; 5 drops weekly for an indefinite period). Iodine therapy must be discontinued for at least 10 days before radio-iodine is given. Antithyroid drugs are rapidly excreted and must be given frequently, and the usual dose may have to be doubled to obtain the desired response. White blood cell counts must be done every 2 weeks to check against agranulocystosis. Radio-iodine controls hyperthyroidism in a manner similar to roentgen therapy, but larger doses may be given by radio-iodine. It is most useful in patients who are poor surgical risks. In uncomplicated mild exophthalmic goitre the therapy of choice is thyroidectomy after preparation with iodine. In uncomplicated severe exophthalmic goitre—prepare with an antithyroid drug, then administer iodine and follow with thyroidectomy. In complicated exophthalmic goitre surgical removal is the method of choice, or prolonged medical management if radio-iodine is not available and surgery is too risky. J. A. STEWART DORRANCE

The Recurrence of Vasoconstrictor Activity after Limb Sympathectomy in Raynaud's Disease and Allied Vasomotor States.

ROBERTSON, C. W. AND SMITHWICK, R. H.: NEW ENGLAND J. MED., 245: 317, 1951.

A careful clinical and laboratory investigation was carried out on patients whose extremities had been denervated by a variety of standard techniques. The objective of this study was to evaluate the effectiveness of sympathetic denervation in elimination of the vasoconstrictor mechanism.

With regard to the upper extremity, either root section or ganglionectomy was shown to eliminate the vasoconstrictor mechanism in over 80% of cases up to one year after surgery. Up to 65% of extremities showed evidence of incomplete denervation when seen from one to five years after operation and this percentage rose to 80% after a five year period. Despite this high incidence of return of vasoconstriction clinical results were classified as "good" or "fair" in the period of from five to fifteen years after operation.

Denervation of the lower extremities was still complete in 85% after a year, provided the main-vessel circulation was intact before and after operation. Incomplete denervation was evident in one-third of cases in the one- to five- and five- to fifteen-year follow-up study. From the clinical standpoint, results were "good" or "fair" in all cases of denervation of the lower extremities. NORMAN S. SKINNER

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Calcification of the Vas Deferens.

WILSON, J. L. AND MARKS, J. H.: NEW ENGLAND J. MED., 245: 321, 1951.

The authors report 60 cases of roentgenologically-evident calcification of the vas deferens. Diabetes was present in 56. The calcification was bilateral in all but eleven cases and when it was bilateral it was of equal degree on each side in all but three patients.

The opinion is expressed that calcification within the vas deferens represents a relatively specific degenerative complication of diabetes. NORMAN S. SKINNER

Aureomycin in Infectious Mononucleosis: A Control Study.

CRONK, G. A.: AM. J. M. SC., 222: 413, 1951.

There has been much debate as to the effectiveness of aureomycin in the treatment of this disease and this author, using a series of 32 patients from the Student Health Service of Syracuse University with 30 controls who did not receive the drug, has attempted its evaluation. In the past three years the author has observed over 800 cases of the disease giving an unusual opportunity to become familiar with its natural history and to appraise properly measures considered to alter its course.

The common naso-pharyngeal type predominated. All were observed in hospital for twenty-four hours before therapy with aureomycin was started. This was the time required to obtain the laboratory data necessary in making the diagnosis but it provided an opportunity to observe the clinical trend of the cases. In the author's experience it has been common for the fever to fall considerably at the end of such a period of bed rest and it was his intention to prevent confusion between possible effects of the drug and the disease's natural evolution. The treated cases received two gm. per twenty-four hours.

The author does not find aureomycin to be effective in reducing the fever or notably changing the clinical course of the disease in the uncomplicated naso-pharyngeal type of the infection. Where there was an accompanying pneumonitis he found that there was quite prompt improvement with the drug. Considering the series as a whole, the hospitalization time was greater for the treated than the untreated cases. The organisms of the oral and pharyngeal flora promptly decreased in number after therapy. A search for significant differences between the treated and the untreated cases as regards changes in blood picture or agglutination titres was not forthcoming and the author warns against undue assumptions in this respect that in the natural history of the disease marked inconstancy in these values is frequent.

It was noted that there was a marked reduction in the toxic effects of the aureomycin used in the experiment following November, 1949 as compared with the drug available before that date. G. A. COPPING

Effectiveness of a New Compound, Benemid, in Elevating Serum Penicillin Concentrations.

BURNELL, J. M. AND KIRBY, W. M. M.: J. CLIN. INVEST., 30: 697, 1951.

One of the difficulties of penicillin therapy has been the rapid renal clearance. Several agents have been concurrently used with penicillin to delay its excretion by the kidneys, carinamide now has clinical use. The agent Benemid was used in the study in doses of 0.5 gm. by mouth, every 6 hours for 12 to 24 hours before the determination of penicillin levels in serum. In the 139 patients the penicillin levels were 3.39 times higher after Benemid. There was an increase in only 68% of patients receiving 300,000 units procaine penicillin once daily, whereas when it was given twice daily there was an increase in penicillin serum levels in 92% of cases. Aqueous penicillin when given three-hourly with Benemid caused an elevation of serum levels in 95% of cases. The dose of Benemid is smaller than that of carinamide and there are no systemic toxic reactions.

J. A. STEWART DORRANCE

A Clinical Study of the Early Post-gastrectomy Syndrome.

CAPPER, W. M. AND BUTLER, T. J.: BRIT. M. J., 2: 265, 1951.

There are two post-gastrectomy syndromes; the early or immediate which occurs at the end of a meal and is similar to the "dumping syndrome"; and the delayed or late, which occurs two to three hours after a meal. The early or immediate post-gastrectomy syndrome occurred in 11.7% of 660 cases of gastrectomy. There is a sudden onset during which the patient tends to brace himself in his chair, he complains of fullness in the epigastrium with distension (79%), as well as lassitude and nausea. Vomiting, when it does occur, gives relief, after which the patients enjoy a full meal. Preceding the onset there is a sensation of warmth with gooseflesh, pallor, palpitations, facial perspiration, and an occipital throbbing headache. The attacks occurred after the largest meal of the day in 80% of cases, and 52% vomited bile stained fluid 30 to 40 minutes after meals. Lying down immediately after the onset of symptoms reduced the syndrome duration from 30 to 45 minutes to 10 to 15 minutes in 89% while 67% only complained of a feeling of epigastric fullness when they took their meals while lying down. In 80% the syndrome did not occur if they lay down for ½ hour before meals and then sat up to eat. The post prandial sensation of fullness is due to jejunal distension following rapid emptying of the stomach, the other symptoms are due to the pull on the gastric remnant due to the weight of the meal and the weight of the suspended afferent loop on the reconstructed stomach. J. A. STEWART DORRANCE

Importance of Early Diagnosis in Rheumatic Fever.

HANSEN, A. E.: POSTGRAD. MED., 11: 90, 1952.

There are more children who have active rheumatic fever from the ages of 11 to 14 than there are from 6 to 8 years, although the peak age of onset is about 6 years and a little over. Not all cases of acute rheumatic fever onset with the so-called typical migrating arthritis or muscle and joint pains, and these cases must be carefully sought for. When young children commence school they are brought into contact with others and may very easily pick up a hæmolytic streptococcus throat infection, so commonly associated with acute rheumatic fever. Tonsillectomy does not prevent the occurrence of acute rheumatic fever nor its exacerbations. Prophylactic penicillin or sulfonamide administration for 1 to 3 years following the initial onset and control of the disease has markedly reduced the number and severity of exacerbations of acute rheumatic fever. Of prime importance is the early diagnosis and control of the disease before irreparable cardiac damage has occurred; if control is initiated the child still has to live with his condition similar to patients with diabetes mellitus, but when controlled by antibiotics and chemotherapeutic agents he may continue with his schooling and participate in selected non-competitive sports and lead a productive life. The outlook of rheumatic fever is improving year by year and this is due to early diagnosis and adequate control of the disease.

J. A. STEWART DORRANCE

SURGERY

Results of the Surgical Treatment of Ulcerative Colitis.

RIPSTEIN, C. B., MILLER, G. G. AND GARDNER, C. M.: ANN. SURG., 135: 14, 1952.

Cases of ulcerative colitis which are complicated or do not respond to medical treatment or have permanent organic changes in the bowel wall should have surgical treatment. The best procedure is a primary resection of the colon and permanent ileostomy with resection of the rectal stump in three to six months. The mortality is low and the complications can be successfully dealt with. Resection of the colon is much better than ileostomy alone since the source of blood and protein loss and of toxic absorption is eliminated. BURNS PLEWES

Œsophageal Hiatus Hernia of the Diaphragm.

SWEET, R. H.: ANN. SURG., 135: 1, 1952.

The terms "short œsophagus" and "paraœsophageal" are discussed and their disadvantages pointed out. From the surgeon's point of view another classification is suggested: "sliding", "parahiatal" and the unusual "congenitally short œsophagus" and "double hernia". Each type of hiatus hernia is described and its frequency in a series of 111 cases given. Congenital short œsophagus is much less frequent than described by the radiologist (5% rather than 85%).

The technical details and advantages of the thoracic approach via the bed of the left 8th rib are described. In a few cases the abdomen was explored through a counter-incision in the diaphragm. In others, a vagectomy was performed for the relief of a co-existing duodenal ulcer or severe gastritis. All the patients operated upon sought surgery because of the severity and/or duration of their symptoms. Six patients had been erroneously diagnosed coronary heart disease. Epigastric distress, intractable pain, blood loss of massive or chronic nature and obstruction were the main symptoms leading to operation.

The results of the operations on these cases of hiatus hernia are given in detail, as on the postoperative complications. There was no mortality. BURNS PLEWES

The Sequels of Postoperative Venous Thrombosis.

BAUER, G.: J. INT. DE CHIRURGIE, 11: 205, 1951.

The acute phase of thrombo-embolism is only one stage in a long process which after a lapse of some years ends in serious and disabling œdema, leg ulcers, pain, skin changes and involvement of the ankle joint. Phlebographs show that the vast majority of fresh thrombosis start in the deep leg veins. The propagation of the clot to the femoral and pelvic veins may result in pulmonary embolism or the thrombus may remain and become recanalized. The end-result in such veins is a stiff, thick-walled tube divided into vertical septa and devoid of valves.

The incidence of leg ulcers and other stasis symptoms may be about 5 per 1,000 population. These people have a recurrence of the leg ulcer every second year, are hospitalized about every fourth year and are off work 25 days per year. Prophylaxis is the best treatment and that means early diagnosis while only the calf veins are involved. This is not easy, but if the thrombosing process can be stopped, no sequelæ will arise. At the Mairestad Hospital (Sweden), heparin is effective. Dicoumerol is unreliable.

The treatment of lower leg stasis syndrome advocated is resection of the popliteal vein plus ligation of the great saphenous and communicating veins if these are demonstrably incompetent. Lumber sympathectomy is recommended when there is superimposed arterial disease. Of 223 extremities followed, such resulted in 65% asymptomatic, 22% improved and little change in 13%. BURNS PLEWES

The Prevention and Treatment of Atelectasis by the Control of Bronchial Secretions.

BAKER, J. M., ROETTIG, L. C. AND CURTIS, G. M.: ANN. SURG., 134: 641, 1951.

Experimental work on animals and clinical observations on postoperative patients by bronchoscopy demonstrate that iodine given intravenously concentrates in the mucosa and submucosa of the bronchi and bronchioles and passes rapidly into the lumen. The maximum concentration of iodine in the mucosa is in ten minutes and there is a great increase in fluid volume. Iodides lower the viscosity of sputum and provides the cilia with a serous fluid layer in which to beat. This aids the cough mechanism and evacuation of secretions.

The empirical use of iodides as expectorants is thus confirmed, and doses of intravenous sodium iodide are recommended (1 gm. twice daily) to obtain a profuse flushing of the tracheobronchial tree, to prevent or treat postoperative atelectasis.

Case reports and chest roentgenograms illustrate the value of this treatment. BURNS PLEWES

The Selection of Patients for Portocaval Shunts.

LINTON, R. R.: ANN. SURG., 134: 433, 1951.

During 6 years 61 patients were operated upon and a portocaval shunt done for portal hypertension at the Massachusetts General Hospital. There are two types of disease that should be considered for this kind of surgery: portal cirrhosis with intrahepatic portal bed block and Banti's syndrome with extrahepatic block. The various classes of cases with portal cirrhosis are discussed in terms of surgical intervention. Portal cirrhosis without œsophageal varices and ascites is not benefited by surgery. If there is ascites and no œsophageal varices, shunts are of doubtful value and are not attempted for the mortality is high. If there is ascites and bleeding, the operation is very difficult but should be considered, plus an operation to control the varices. Ascites may follow massive bleeding due to low blood proteins and respond to repeated small transfusions so that such patients may become candidates for shunt surgery. The most suitable cases for portocaval anastomosis are those with cirrhosis and bleeding œsophageal varices without ascites and constitute 60% of the series. At present patients with cirrhosis and varices without bleeding are not operated upon, for they may not bleed, but they may be done in the future.

Extrahepatic portal block cases which have had massive hæmorrhage often have a normal liver and enlarged spleen. Portocaval shunt is indicated to prevent invalidism. BURNS PLEWES

Surgical Significance of Duodenal Diverticula.

PATTERSON, R. H. AND BROMBERG, B.: ANN. SURG., 134: 834, 1951.

Diverticula of the duodenum are usually asymptomatic and are most common in the second portion, near the papilla of Vater. They are herniations through the muscular wall of the duodenum. There is no pathognomonic symptom complex and it is often a difficult problem to evaluate their clinical significance. Complications due to obstruction of the bile or pancreatic ducts or duodenum, inflammation with perforation or enterolith, neoplastic change or hæmorrhage from ulceration or rupture of fragile vessels in the wall may prove the diverticulum to be the offending lesion. Rest, bland diet, postural drainage and antibiotics may help.

The problem of identifying the sac and its relation to the ampulla of Vater is discussed. Two cases are described. In one the duodenal diverticulum proved to be the source of chronic blood in the stool. In the other, it was the cause of severe post-prandial pain not relieved by cholecystectomy. BURNS PLEWES

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Increased Urinary Excretion of Noradrenaline and Adrenaline in Cases of Pheochromocytoma.

VON EULER, U. S.: ANN. SURG., 134: 929, 1951.

In six cases of hypertension, estimations done in the Karolinski Institutet of Stockholm showed greatly increased urinary excretion of noradrenaline and adrenaline. In each case a pheochromocytoma was subsequently removed at operation and these excretions fell to normal. Of the three cases in which the noradrenaline was greater than the adrenaline concentrations, the tumours were outside the suprarenal (at the bifurcation of the aorta, or at the junction of the renal artery and aorta). It is suggested that the diagnosis of pheochromocytoma may be confirmed and the site of the tumour predicted by these estimations. The hypotension which accompanies the extirpation of these tumours should be controlled by noradrenaline administration. BURNS PLEWES

OBSTETRICS AND GYNÆCOLOGY

Trends in Therapeutic Abortion.

MOORE, J. G. AND RANDALL, J. H.: AM. J. OBST. AND GYNEC., 63: 28, 1952.

One hundred and thirty-seven cases of therapeutic abortion performed at the University of Iowa hospitals are reviewed. The rate and indications for therapeutic abortion in this series do not vary significantly from those of most other institutions. Excepting for the war period, there has been a progressive decrease in the therapeutic abortion rate from the years 1926 to 1950. Toxæmia of pregnancy, tuberculosis, cardiac complications and renal diseases account for a large majority of indications for therapeutic abortion. The study demonstrates a trend toward the abdominal approach in patients requiring sterilization and in those whose pregnancies are interrupted after the third month of gestation.

The mortality rate in this series for therapeutic abortion is 5.1%. The resulting maternal salvage is probably greater than if all the patients had been allowed to continue their pregnancies. ROSS MITCHELL

Bacteriology of Vaginal Flora After Use of Internal Tampons.

BRAND, E. N.: BRIT. M. J., 1: 24, 1952.

A series of one hundred women used vaginal tampons for protection during the menstrual period over three to ten successive periods in 57 cases, two-monthly periods in 17 cases and one month period in 26 cases. Smears and cultures taken before and after each period showed no appreciable change in the bacterial flora of the vagina.

A study was made of 33 unselected cases of cervical erosion in which internal tampons were used. Healing of the erosions was not adversely affected; it compared favourably with a control series using the perineal pad. In three of the cases the bacterial flora corresponded to grade 3 at the beginning of the study, but returned to the normal grade 1 at the conclusion.

There was no evidence of local irritation or inflammation caused by the use of internal tampons. No appreciable alteration in the vaginal p-H or in the glycogen content of the epithelial cells was noted. A retained tampon may cause damage to the vagina or cervix, and patients should be warned to remove the soiled one before inserting a fresh one. Removal is particularly important at the end of the menstrual period.

There is no evidence that vaginal tampons are prejudicial to health. ROSS MITCHELL

The Placental Circulation, Maternal and Fetal.

EARN, A. A. AND NICHOLSON, D.: AM. J. OBST. AND GYNEC., 63: 1, 1952.

Investigations carried out on placentas *in utero* confirmed the complete separation of the fetal and maternal circulations. By means of saline, air and latex injection techniques the concept of the maternal placental circulation as envisaged by Spanner was verified. The maternal arterial blood enters the maternal surface of the placenta, flows toward the subchorionic lake beneath the fetal surface, and leaves as maternal venous only via the marginal zone. The placental thickness may be 2 to 3 times that found at delivery. ROSS MITCHELL

Ovarian Denervations for Ovarian Dysmenorrhœa.

WISEMAN, D. C.: BRIT. M. J., 1: 141, 1952.

Seventy cases of ovarian dysmenorrhœa treated by ovarian denervation are surveyed. This operative treatment is undertaken only when bimanual compression of the ovaries accurately reproduces the pain. Ovarian denervation should be practised in young women in whom definite appendicitis is not found at operation. Relief was obtained in 93.5% of cases. ROSS MITCHELL

PÆDIATRICS

An Evaluation of the Treatment of Primary Atypical Pneumonia with Aureomycin, Chloromycetin and Terramycin.

GRAVES, F. B. AND BALL, W. O.: J. PEDIAT., 39: 155, 1951.

The authors treated 143 cases of primary atypical pneumonia ranging in age from 6 months to 5 years with aureomycin (58), chloromycetin (66), and terramycin (19) in standard doses for 5 days. The respiratory symptoms varied from minimal to severe, resembling pertussis. The temperature was, in many cases, not elevated and diarrhœa without vomiting was present in almost all cases under 6 months of age and in 65% of those under 1 year. Localized râles were present in most of the cases and x-rays showed hilar enlargement with a diffuse fine infiltration causing the "ground glass" appearance. Reactions occurred in aureomycin 15.5%, chloromycetin 7.6%, and terramycin 5.2%. The conclusion from this study is that terramycin is the drug of choice for the treatment of primary atypical pneumonia. J. A. STEWART DORRANCE

Cardiac Complications of Pertussis.

WALKER, S. H.: J. PEDIAT., 40: 200, 1952.

During a 6 month period 1.9% of 159 cases of pertussis developed findings indicative of cardiac involvement. Persistent and excessive tachycardia, moderate hepatomegaly, poor quality of the heart sounds, and dyspnœa and orthopnœa were the presenting symptoms. One of these patients died of cardiac failure and one developed manifest failure, but eventually recovered. Venous pressure determinations were made in all cases and there was a marked increase caused by compression over the liver indicating incipient cardiac failure, particularly so in 2 cases. In all cases there was no evidence of pre-existing cardiac disease prior to the onset of pertussis. In the one fatal case at autopsy examination there was no evidence of myocarditis, and in all three cases Bazet's constant ($K\ QT/\sqrt{RR}$) was within normal limits, hence ruling out myocarditis. Right ventricular insufficiency as indicated by increased venous pressure from liver compression and radiologic evidence of cardiac enlargement persisted for 5 months in 1 case, while in another case E.C.G. changes of myocardial injury persisted for 6 weeks. There was good

response to digitalis in all cases, and fair response to mercurial diuretics. Pulmonary interstitial emphysema was associated with the cardiac involvement in all cases, and it is felt by the authors that this is the underlying cause of the cardiac involvement causing overwork and injury to the right ventricle. J. A. STEWART DORRANCE

Umbilical Hernia.

CRUMP, E. P.: J. PEDIAT., 40: 214, 1952.

Umbilical hernia is rarely seen in white infants and children, while it is quite frequently seen in Negro infants and children. It occurs in approximately 59% of Negro infants under 1 year of age, in 16% of Negro pre-school children, and in only 3% of white infants. The umbilical fascia is deficient in Negroes and pre- and post-natal malnutrition causes decreased muscular tonus. Umbilical hernia often develops in infants with cutis navel, cretinism, prematurity and other conditions associated with a low B.M.R. The incidence of umbilical hernia varies inversely with the age of the subject—41.6% occurring in infants under 1 year of age and none in children over 8 years of age—overall occurrence in full-term children to 8 years of age is 25.1% and in premature children 39.5%. Sex caused little influence on the frequency of umbilical hernia in this study, females exceeded males by 2.6%, although previously the M./F. ratio of 8 to 10/1 has been quoted.

J. A. STEWART DORRANCE

DERMATOLOGY

Treatment of Lupus Erythematosus with Mepacrine.

PAGE, F.: LANCET, 261: 755, 1951.

A chance observation by the author, who is medical registrar at Middlesex Hospital, London, led to the use of mepacrine in a severely involved case of chronic discoid lupus erythematosus. The result was so dramatic that all cases of the disease subsequently seen in the dermatological department of Middlesex Hospital, and some cases seen at St. John's Hospital for Diseases of the Skin have been treated by this drug. Of 18 cases thus treated only one has failed to improve. One case of acute disseminated lupus erythematosus was treated with success, and in two cases associated changes of rheumatoid arthritis disappeared as the skin condition improved. All but one case was of the chronic type. Dosage varied from 100 mgm. to 300 mgm. daily by mouth, but as a result of experience in the earlier cases the practice arrived at was to give 300 mgm. daily until the skin was stained, when 100 mgm. daily was continued as a maintenance dose. The degree of improvement seemed to be related to the degree of staining. The duration of treatment varied with the clinical response and the degree of skin discoloration; in some cases 6 weeks' treatment was sufficient, while it was seldom necessary to continue treatment for more than 3 months. Skin discoloration persisted for many weeks after treatment was stopped and improvement sometimes was most rapid during this period.

In view of the successful response to treatment of exacerbations after initial improvement it is suggested that a small maintenance dose for several months might be valuable to patients with frequent relapses. The patient should be warned of the yellow or brown staining of the skin which will occur. Only one case developed a serious complication, in the form of generalized itching and hyperkeratosis, not of a lichenoid character, which necessitated cessation of treatment. Clinical results were good, although minor recurrences appeared. This reaction was apparently due to an acquired sensitivity since after its subsidence in two months as small a dose as 50 mgm. evoked recurrence. The experiment was in progress of employing very small doses combined with an antihistaminic drug. Serious side-effects which may involve skin, central nervous system, hæmatopoietic system or eyes are enumerated, but it is generally admitted that the frequency of toxic reactions is very low. The milder side-effects include gastro-intestinal symptoms, faintness, headache and depression. The effect of mepacrine in reducing the light-sensitivity of the skin appears to be the most probable explanation of its beneficial action in lupus erythematosus.

D. E. H. CLEVELAND

Treatment of Lupus Erythematosus with Vitamin B_{12}. Preliminary Report of 4 Cases.

GOLDBLATT, S.: J. INVEST. DERM., 17: 303, 1951.

The author publishes this brief clinical report in the hope that further inquiry of this therapy by others will be stimulated. The patients were 3 males with chronic discoid lesions and 1 female with severe, disseminated, subacute lupus erythematosus. In the male cases the eruption was limited to the face; 2 had received much treatment with gold, bismuth, liver extract and tocopherol, and had sustained numerous recurrences over a period of 5 years. The response in these cases was good, but not so dramatic as in the first case, in which no other treatment had been given. In this case the lesions had cleared almost completely after receiving 8 weekly intramuscular injections of 15 micrograms of Bevidox. The female patient, in addition to a widespread eruption from head to feet, erroneously treated formerly with ultraviolet irradiation and penicillin, complained of weakness, faintness and dizziness. There is no mention of leukopenia or temperature elevation. She was given 15 micrograms of Bevidox 3 times weekly. After treatment there was a mild relapse with return of the subjective symptoms and eruption due to insolation. The dose was thereupon increased to 20 micrograms and this was followed by a rapid regression of all signs and symptoms. It was learned during the treatment that the patient, aged 25, had become pregnant a few weeks before treatment was begun. The author is conservative in his presentation of these cases but believes that if wider experience establishes the therapeutic efficiency of B_{12} its low cost and lack of toxicity should favour its use.

D. E. H. CLEVELAND

Clinical Evaluation of "Diphenylpyralin" As An Antifungal Agent.

SOKOLOFF, O.: ARCH. DERM. AND SYPH., 64: 754, 1951.

This medication, used as soaks of a 2% aqueous solution in wet, oozing, inflammatory eruptions and in a 2% ointment in dry eruptions was found effective in treating infections in a variety of locations caused by a variety of fungi, including *candida albicans*. Routine patch-testing with the 2% ointment in 50 cases failed to produce evidence of primary irritation or sensitization. In 103 cases treated, one patient only, with tinea cruris, discontinued the medication after the first application because of ensuing local erythema. The most dramatic results were obtained in tinea pedis. No beneficial effects were obtained in 6 cases of onychomycosis due to *T. purpureum* and 10 cases of tinea capitis due to *M. Audouini*. The drug is not a cure-all but appears to be effective in the treatment of mycotic infections caused by a number of the common fungi. Its antihistaminic effect is an added benefit in itchy mycotic eruptions.

D. E. H. CLEVELAND

Metastatic Cutaneous Carcinoma from the Breast. A Clinical and Pathologic Study of a Case Showing Three Types of Lesions.

LEAVELL, U. W. JR. AND TILLOTSON, F. W.: ARCH. DERM. AND SYPH., 64: 774, 1951.

Three common types of cutaneous metastases from breast-carcinoma are described, and in the authors' case all three were present. Probably the most common is one in which the dermal lymphatics are invaded by

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tumour cells associated with hyperæmia and inflammation of the corium. The skin is red, warm and slightly brawny, and has well demarcated margins similar to those of erysipelas. This is called inflammatory carcinoma or erysipelas carcinomatosa. Less common is the carcinoma telangiectatum in which the skin over the breast presents numerous pink papules or pseudovesicles, which may be pink, red, purplish or black, depending upon the amount of blood contained in the endothelial-lined spaces in the corium filled with tumour cells and blood. In carcinoma en cuirasse the metastatic carcinoma may occasionally instead of being diffuse produce nodular aggregations of tumour cells in the thickened corium. In the two latter varieties inflammation is absent or minimal. The histogenesis of metastatic cutaneous carcinoma seems to be that of a direct extension and local propagation of malignant tumour cells in dermal lymphatics, venules, capillaries and unlined tissue spaces. Inflammatory response or fibrous tissue proliferation may be provoked. Any sudden onset and steady progression of a diffuse erythema with or without induration, a papular, pseudovesicular or pseudocystic lesion or a diffuse or nodular thickening of the skin in an elderly person should be suspected. The only positive way to establish a diagnosis is by biopsy.

D. E. H. CLEVELAND

INDUSTRIAL HEALTH

Fifty Years of Medical Progress: Medicine as a Social Instrument: Industrial Medicine.

TABERSHAW, I. R.: NEW ENGLAND J. MED., 244: 634, 1951.

In this article the author traces the development of industrial medicine through the last half-century from its rôle as a "fragment of traditional medicine and surgery practiced on industry's premises" to its present status as a human science concerned with all the facets of man's physical, mental and emotional actions and reactions at work. He shows how industrial progress, medical progress and technologic growth were gradual in the beginning of the century, spurted ahead during World War I and made startling advances during and after the second World War. He emphasizes the ever-increasing interdependence of medicine and industry. The need for medical guidance, emphasized during war-time, is most dramatic today in the field of atomic energy where the need of health protection for industrial personnel is vital. Another challenging avenue of medical research is that of "space medicine" formerly "aviation medicine".

The transformation of industrial medicine into a field of public health and preventive medicine is equally outstanding. Elements in its development during the last fifty years have included: passage of workmen's compensation acts in the major industrial states, disability evaluation and handling of compensation cases, accident prevention measures—engineering revision and plant inspection, and later, accident prevention programs with participation of the industrial workers—interest in the personal factor as a cause of industrial accidents, interest in psychodynamic aspect of workers' health, increased interest in environmental control, physical examinations and selective placement, growth of industrial *hygiene* with its emphasis on the prevention of occupational diseases and the modification of workmen's compensation laws to include occupational disease, participation of all medical and sanitary sciences, determination of general principles of control applicable to all industrial processes, establishment of safe atmospheric limits for the various industrial poisons, attitude of the worker himself insisting on better working conditions, and, development of health services.

The active rôle taken in this progress by national, state and local governments is also discussed. Especially in the last fifteen years, various Federal departments have functioned with increasing success. Other important developments are the educational projects by means of which training can be given in various aspects of industrial medicine, and the professional organizations being formed.

In the author's opinion the next fifty years will find more and more medical practice encompassed within the industrial framework until it may happen that the individual's occupation will be the focal point for health programs affecting every area of his life, the community, and the nation.

MARGARET H. WILTON

Dust Inhalation in Relation to Pulmonary Disease.

SILSON, J. E.: DIS. OF CHEST, 18: 562, 1950.

Dust inhalation as referred to in this article is that resulting from industrial exposure and the observations on dust effects are limited largely to those pathological processes which can be clearly differentiated from pulmonary diseases of non-occupational origin. The term which has been applied to these characteristic lung changes produced by dust is "pneumoconiosis". All forms of solid particulate matter generated in the course of industrial operations—dusts, fibres and fumes—are included in this discussion. The general types of pulmonary disease which may be produced by these materials are presented, followed by a brief description of the specific pulmonary effects produced by certain ones.

The type of pulmonary pathology which may be caused is determined by the manner in which the lung cleansing mechanism is disturbed and by the type of reaction which results. Size, composition and structure of the particles are all determining factors. These reactions may be fibrotic, inflammatory, degenerative, allergic, carcinogenic or merely mechanical impairment of function.

The most important material known to cause specific pulmonary effects, is silica. It is widely distributed both free and combined, in the earth's crust. The free crystalline form is perhaps the best known cause of pneumoconiosis. After discussing its rôle and the nature of the disease produced, the author presents evidence as found in literature, that amorphous silica, silicates and even silicon carbide have been shown to exert deleterious effects.

Reference is made also to pulmonary diseases of non-silicotic origin and to organic dust diseases. Coal dust has been indicated as the cause of specific lung pathology, as have also certain of the metals, notably beryllium and cadmium. The latter are actually systemic poisons, but since industrial exposure to them occurs primarily by inhalation, the principal pathology is usually present in the lungs. This is described. Notable among the materials of organic origin found to be responsible for specific types of pulmonary disease, is bagasse—the residue of sugar cane after extraction. Although the disease caused by this fibrous dust usually clears up, It may be fatal or may result in chronic fibrosis or bronchiectasis. Pulmonary disease among cotton workers also has been reported. An acute form is believed to be due to the dust of the fungi or bacteria which grow on damp, unsterilized cotton. The chronic form, known as byssinosis, develops after many years of inhalation of cotton fibres. It is not yet known whether this is a specific fibrotic response, an allergic reaction, or the end result of repeated subclinical acute infections.

In the author's opinion, every case of chronic pulmonary disease necessitates a careful evaluation of both the clinical picture and the occupational history in order to rule out a possible etiological or aggravating factor in the patient's working environment, and to ensure an optimum prognosis by eliminating all future exposure to any harmful atmospheric agents found.

MARGARET H. WILTON

It is much easier to be critical than to be correct.—Disraeli.

FORTHCOMING MEETINGS

CANADA

QUEBEC DIVISION, C.M.A., Annual Meeting, North Hatley, Que. (Dr. G. W. Halpenny, Secretary, 1538 Sherbrooke St. W., Montreal.) May 2-3, 1952.

AMERICAN COLLEGE OF SURGEONS, Sectional Meeting, Royal York Hotel, Toronto, Ont. (Dr. H. P. Saunders, 40 E. Erie St., Chicago 11, Ill.) May 15-17, 1952.

ONTARIO MEDICAL ASSOCIATION, 72nd Annual Meeting, Hamilton, Ont. (Ontario Medical Association, 135 St. Clair Ave. W., Toronto.) May 19-23, 1952.

CANADIAN SOCIETY OF MICROBIOLOGISTS, University of Montreal, Montreal, Quebec. (Dr. N. E. Gibbons, Secretary-Treasurer, Division of Applied Biology, National Research Council, Ottawa 2, Ont.) June 5-7, 1952.

CANADIAN MEDICAL ASSOCIATION, Annual Meeting, Banff Springs Hotel, Banff, Alberta. (Dr. T. C. Routley, 135 St. Clair Ave., West, Toronto 5, Ont.) June 9-13, 1952.

SOCIETY OF OBSTETRICIANS AND GYNÆCOLOGISTS OF CANADA, Annual Meeting, Banff Springs Hotel, Banff, Alberta. (Dr. G. A. Simpson, Secretary, Royal Victoria Hospital, Montreal, Que.) June 6-8, 1952.

CANADIAN PUBLIC HEALTH ASSOCIATION, Annual Convention, Fort Garry Hotel, Winnipeg, Man. (Canadian Public Health Association, 150 College St., Toronto 5, Ont.) June 15-18, 1952.

UNITED STATES

AMERICAN GOITRE ASSOCIATION, Annual Meeting, St. Louis, Missouri, May 1-3, 1952.

AMERICAN ASSOCIATION FOR THORACIC SURGERY, Baker Hotel, Dallas, Texas, May 8-10, 1952.

AMERICAN ELECTROENCEPHELOGRAPHIC SOCIETY, 6th Annual Meeting, The Hotel Claridge, Atlantic City, N.J. (Dr. John A. Abbott, Secretary, Massachusetts General Hospital, Boston 14, Mass.) May 10-11, 1952.

NATIONAL TUBERCULOSIS ASSOCIATION AND ITS MEDICAL SECTION, The American Trudeau Society, Annual Meeting, Statler Hotel, Boston, Mass. (Dr. H. L. Mantz, 1103 Grand Ave., Kansas City, Mo.) May 26-29, 1952.

AMERICAN COLLEGE OF CHEST PHYSICIANS, 18th Annual Meeting, Congress Hotel, Chicago, Ill. (Executive Offices, American College of Chest Physicians, 112 E. Chestnut St., Chicago 11, Ill.) June 5-8, 1952.

AMERICAN MEDICAL ASSOCIATION, Annual Session, Chicago, Ill. (Dr. George F. Lull, 535 N. Dearborn St., Chicago 10, Ill.) June 9-13, 1952.

AMERICAN UROLOGICAL ASSOCIATION, Annual Meeting, Chalfonte-Haddon Hall, Atlantic City, N.J. (Dr. Charles H. DeT. Shivers, Boardwalk, National Arcade Bldg., Atlantic City.) June 23-28, 1952.

MEDICAL LIBRARY ASSOCIATION, 51st Annual Meeting, Lake Placid Club, Essex County, N.Y. (Miss Helen G. Field, Public Relations Officer, 4506 Avondale St. Bethesda 14, Md.) June 24-27, 1952.

AMERICAN CONGRESS OF PHYSICAL MEDICINE, 30th Annual Scientific and Clinical Session, The Roosevelt Hotel, New York, N.Y. (Dr. Walter J. Zeiter, Executive Director, Am. Congress of Physical Medicine, 30 N. Michigan Ave., Chicago 2, Ill.) August 25-29, 1952.

CONGRESS OF ANÆSTHETISTS, THE INTERNATIONAL ANÆSTHESIA RESEARCH SOCIETY AND THE INTERNATIONAL COLLEGE OF ANÆSTHETISTS, 27th Congress, Cavalier Hotel, Virginia Beach, Va. (Laurette McMechan, Executive Secretary, 318 Hotel Westlake, Rocky River, Ohio.) September 22-25, 1952.

OTHER COUNTRIES

INTERNATIONAL COLLEGE OF SURGEONS, Madrid, Spain. (Dr. Max Thorek, 850 West Irving Park Road, Chicago, Ill.) May 20-24, 1952.

FIRST INTERNATIONAL CONGRESS OF DIETETICS, The Royal Tropical Institute, Amsterdam, Netherlands (Miss Diane J. Ten Haaf, General Secretary Executive Committee, 13 Pomonaplein, The Hague, Netherlands.) July 7-11, 1952.

CONGRESS ON DIABETES MELLITUS, The International Diabetes Federation, Leyden, Netherlands. (Dr. F. Gerritzen, 33 Prinsegracht, The Hague, Netherlands.) July 7-12, 1952.

BRITISH CONGRESS OF OBSTETRICS AND GYNÆCOLOGY, 13th Congress, Ripley Smith Hall, University of Leeds, Leeds, England (Dr. B. Jeaffreson, The Hospital for Women, Coventry Place, Leeds, Yorkshire.) July 8-11, 1952.

COMMONWEALTH AND EMPIRE HEALTH AND TUBERCULOSIS CONFERENCE, 3rd Conference, Central Hall, London, England. (Secretary General, National Association for the Prevention of Tuberculosis, Tavistock House North, Tavistock Square, London, W.C.1) July 8-13, 1952.

INTERNATIONAL CONGRESS OF RADIOLOGY, 7th Congress, Copenhagen, July 14-19, 1953, (This, in error, was given as 1952 in our last issue.)

INTERNATIONAL CONGRESS OF PHYSICAL MEDICINE, London, England. (Dr. A. C. Boyle, 45 Lincoln's Inn Fields, London, W.C.2) July 14-19, 1952.

INTERNATIONAL CONGRESS OF DERMATOLOGY, 10th Congress, London, England. (Dr. G. B. Mitchell-Heggs, St. Johns Hospital, Lisle St., Leicester Square, London, W.C.2) July 21-26, 1952.

INTERNATIONAL UNION AGAINST TUBERCULOSIS, 12th Congress on Diseases of the Chest, 2nd Congress, sponsored by the Council on International Affairs of the American College of Chest Physicians, Rio de Janeiro, Brazil. (Mr. M. Kornfeld, Executive Secretary, Am. College of Chest Physicians, 112 E. Chestnut St., Chicago 11, Ill.) August 24-30, 1952.

INTERNATIONAL UNION AGAINST TUBERCULOSIS, 12th Congress and the International Congress on Diseases of the Chest, 2nd Congress, sponsored by the Council on International Affairs of the American College of Chest Physicians, Rio de Janeiro, Brazil. (Executive Officer, American College of Chest Physicians, 112 E. Chestnut St., Chicago 11, Ill.) August 24-30, 1952.

INTERNATIONAL CONGRESS ON NEUROPATHOLOGY, Rome, Italy (Dr. C. M. Fisher, The Montreal General Hospital, 66 Dorchester St. E., Montreal, Que.) September 8-13, 1952.

INTERNATIONAL CONGRESS OF INTERNAL MEDICINE, Friends House, London, N.W.1, England. (Sir Harold Boldero, 12 Pall Mall East, London, S.W.1) September 15-18, 1952.

NEURORADIOLOGIC SYMPOSIUM, Stockholm, Sweden (Docent Ake Lindborn, Serafimerlasarettet, Stockholm K, Sweden.) September 17-20, 1952.

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NEWS ITEMS

ALBERTA

Dr. R. Cameron Harrison has arrived back to his surgical practice in Edmonton, after a three months' tour of the surgical research centres of the United States. Dr. Harrison attended centres in New Orleans, Baltimore, Minneapolis, Boston and New York. Dr. Harrison will head the Surgical Research Department of the University of Alberta, beside his private practice.

The Surgical Society of Western Canada met in Edmonton at the University Hospital on February 29 and March 1. A fine list of members of this Society attended from the other Prairie cities; Winnipeg and Regina and Saskatoon being especially represented. The program this year gave more time to discussion of the papers presented, this proved very timely. The next meeting will be in Winnipeg.

A goodly number of medical men were successful in obtaining their Fellowship and Certification with the Royal College of Surgeons and Physicians of Canada. A list will be found elsewhere of the successful candidates. We wish to congratulate these men in their recent success.

The new Aberhart Memorial Sanatorium was opened officially in March on the University of Alberta campus. This most modern three hundred bed hospital will fill a great need in this part of the Province and will allow the patients to be concentrated in one unit instead of several city hospitals. Dr. H. H. Stephens is Superintendent of the Aberhart hospital. W. C. WHITESIDE

The Refresher Course held in Edmonton by the C.M.A. Alberta Division during the week of March 24 was attended by 216 registered members, 96 of whom were from outside Edmonton. The clinics and the paper discussions met the wishes of the majority who attended. The Chairman of the course was Dr. J. W. MacGregor, Professor of Pathology at the University.

A new agreement with the Provincial Government has been made whereby the sum of $15.00 is paid in cases of O.A.P. and Mothers' Allowance per capita per eligibility per year. The old rate was $12.50.

The C.M.A., Alberta Division annual meeting is being held in the City of Lethbridge September 24 to 27 inclusive in the Civic Centre. This centre is one of the best equipped and arranged auditoriums in Canada and should fulfill all the requirements for similarly large gatherings. Dr. H. V. Morgan of Calgary is Chairman for the arrangements and Dr. E. Cairns of Lethbridge for the scientific program. Plans are being made for the largest and best meeting in "this far West".

No one should neglect attending the Banff Meeting in the month of June. W. CARLETON WHITESIDE

BRITISH COLUMBIA

Gradually a program of hospital building is beginning to take shape in British Columbia. The new Burnaby Hospital, which will have something over 100 beds at first, is expected to open its doors this summer. St. Joseph's Hospital in Victoria has just completed a large new wing which brings the total bed capacity to 500: with complete administrative offices, new diet kitchen, etc.

St. Vincent's Hospital, in Vancouver, should start its new wing at any time. Mount St. Joseph is extending its bed facilities and at any time now the Vancouver General Hospital may announce its new 500-bed addition.

In other parts of the province, too, hospital facilities are growing. Alberni, Squamish and other towns are enlarging existing hospitals, or building new ones.

Hon. W. T. Straith, Provincial Secretary and Minister of Education, speaking in the Legislature recently, gave some figures about mental disease in British Columbia, where, he stated, one in 200 of the population is in a mental institution. He stressed the necessity for extension of treatment, especially in the matter of child guidance, and outpatient treatment.

In connection with the latter, Dr. A. M. Gee's report of the Crease Clinic was given to the Social Welfare and Education Committee of the Legislature. It showed that 87.9% of the 964 patients it treated in 1951 were discharged cured. This Clinic, under Dr. Gee, is doing an immense job in three ways. It has a curative aspect, in which it is extremely successful, being able to get mental disease in its early stages, and treat it intensively; it has a preventive aspect; and it conducts a most complete department of research.

The Hon. Gordon Wismer, attorney-general for B.C. has announced plans for a pilot scheme of treatment and rehabilitation of narcotic addicts, of which B.C. has a very large number. A sum of $50,000.00 has been voted for this purpose, and will be used for exploration and study mainly during the next year. In this connection a graceful and sincere tribute was paid first by Mr. Wismer and secondly by the House as a whole, to Mr. E. E. Winch, C.C.F. member for Burnaby, who for years has been unsparing of time and energy in his efforts to bring about some such institution in British Columbia.

Measles is now the leading "children's" disease in Vancouver, some 600 cases having been reported in the first two months of the year—this, of course, means very many more unreported. Chickenpox is also prevalent, and has been unusually severe in some cases, several children having it almost in confluent form, with high temperatures. Scarlet fever is quieting down from a high incidence in 1951.

A minor explosion occurred in the Legislature recently over the matter of drugs available to pensioners and other social assistance cases. Under the B.C. arrangements, these are supplied free, (according to a recognized formulary), together with medical attendence (partly paid for out of a fund supplied by the Government) hospital care, etc.

The cost of drugs, especially sedative drugs, vitamins and hormones, has been steadily increasing—which is not altogether surprising, as the number of beneficiaries is steadily rising. Undoubtedly, however, the situation calls for closer supervision, and the minister of Health, Hon. A. D. Turnbull, caused the explosion referred to when he sent out a circular to the druggists, and, we believe, to the medical profession, cutting off a great many of these.

This caused quite an uproar in the House, and Mr. Turnbull has since modified his ruling. One cannot but sympathize with his concern in this matter, as he must work to a budget which is far from elastic, and there is no doubt that, as one sees in Great Britain, and in other areas, the demand for free benefits increases steadily, and is a serious threat to the solvency of any scheme: it is always very hard to withdraw or diminish any benefit once given.

Dr. Felton, till recently Medical Consultant to the B.C. Hospital Insurance Commission, has resigned, and his place has been taken by Dr. Allan Fraser of Victoria.

As a result of the split in the Coalition Government of B.C. no action was taken on the report of the Legislative Committee on Hospital Insurance. This will be left to the incoming Government to deal with.

Some changes were made in Workmen's Compensation payments of pensions, etc.—but the main report of Chief Justice Sloan, who was appointed Commissioner to bring in a report with recommendations, is still to be made.

The Osler Dinner of the Vancouver Medical Association was held at the Vancouver Hotel on March 4, 1952. The Osler Lecturer for the occasion was Dr. Ethlyn Trapp, of Vancouver, and her subject was "Modern Alchemy". Dr. Trapp, who is a Past President of the British Columbia Medical Association, and is a specialist in radiotherapy, gave a distinguished address, dealing with the use of electricity in treatment of disease, from a historical standpoint. It will be published later in the Bulletin of the Vancouver Medical Association.

J. H. MACDERMOT

MANITOBA

Additions and alterations to the hospital at Pine Falls will provide space for 14 more beds, a nine-bassinet nursery, and modern medical, surgical and obstetrical services. Space is also to be provided for local health unit clinics. The federal and provincial governments will each contribute $18,200 toward the building costs. The remainder will be met by the Manitoba Paper Company, Limited, and other private donors.

At the annual meeting of Manitoba Medical Service the prepayment scheme sponsored by the Manitoba Medical Association, Dr. P. H. McNulty was re-elected chairman of the board of trustees. He is also chairman of Trans-Canada Medical Services. Up to December 31, 1951, 118,210 persons, about one in six of Manitoba's population, were covered by the medical service. Disbursements for medical claims in 1951 amounted to $1,551,951. The service set aside $128,085 for emergencies and epidemics.

The newly constructed eight-bed hospital and Rockwood-Stonewall health unit offices at Stonewall were opened on March 11 by Hon. Ivan Schultz, Minister of Health and Public Welfare and R. W. Bend, M.L.A. for Rockwood.

The annual meeting of the Sanatorium Board of Manitoba was held on February 29. Dr. E. L. Ross, Medical Director reported that the death rate from tuberculosis during 1951 in Manitoba was 21.6 per 100,000, the lowest ever recorded for Manitoba. The decrease was due to fewer Indian deaths which showed a striking decline during the past four years, from 125 in 1948 to 56 in 1951.

Dr. Digby Wheeler has been appointed general chairman of the St. Boniface Hospital building fund. The expansion of the hospital is designed to meet medical advancements for the next fifty years.

Dr. John B. Armstrong, assistant professor of physiology, Faculty of Medicine, University of Manitoba, has been awarded a grant of $30,000 from the John and Mary R. Markle Foundation. The grant is of $6,000 for five years, made direct to the medical school where the research will be carried out which will be in the University of Manitoba. His research program involves the study of congenital heart disease, the reason for shortness of breath in cardiac conditions and the treatment of chest infections. Dr. Marcel C. Blanchaer, of the department of physiology, University of Manitoba, also holds a Markle scholarship.

Hon. Ivan Schultz, minister of Health and Public Welfare of Manitoba, has announced an increase of 25 cents a day to hospitals for the care of both indigent and public ward patients. Despite this it was asserted on the floor of the legislature that the full cost of looking after indigent patients in hospital is still not being met.

ROSS MITCHELL

NEW BRUNSWICK

The Saint John Medical Society was privileged to have Dr. Robert McWhirter as their guest speaker at their March meeting. Dr. McWhirter is Professor of Medical Radiology at Edinburgh University and director of X-ray and Radiotherapy Departments Edinburgh Infirmary and is appearing in various United States and Canadian centres following the meeting of the American Cancer Society in Cincinnati. Speaking on the treatment of cancer of the breast, he summarized the reasons on which be bases his own form of treatment and stressed the fact that the surgeon and radiologist must work as a team from the time the patient is first seen to completion of treatment. In most cases of cancer of the breast he advises simple mastectomy followed by special course of radio-therapy. His visit to Saint John was of especial interest as Dr. McWhirter's methods have lately been introduced here by Dr. J. A. Caskey, until lately Dr. McWhirter's assistant at Edinburgh.

The number of visitors from Prince Edward Island, Nova Scotia and Maine as well as members from New Brunswick centres made this meeting perhaps the largest gathering of the society in many years.

At the annual meeting of the N.B. Branch of the Canadian Cancer Society a most representative medical advisory committee was elected comprising the following: Dr. J. R. Nugent, Dr. R. A. H. MacKeen and Dr. J. A. Caskey, Saint John; Dr. J. A. Melanson, Dr. R. J. Dolan, Fredericton; Dr. H. R. Ripley and Dr. D. F. W. Porter, Dr. D. C. Steeves and Dr. Ian McLennan, Moncton; Dr. D. A. Thomson, Bathurst; Dr. E. A. Stuart, St. Andrews; Dr. F. Woolverton, Woodstock; Dr. J. C. Duffy, Chatham.

Dr. H. R. Ripley of Moncton who was ill for some time has now returned to his duties at the Moncton Hospital.

Dr. E. A. Petrie of St. Joseph's Hospital is at present in the Montreal Neurological Hospital where he underwent an extensive surgical repair of his injured hip. His convalescence is expected to be prolonged.

Dr. R. G. MacDonald and Dr. Stephen Weyman were appointed to the senior pædiatrics staff of the Saint John General Hospital on completion of their certification and Dr. W. D. Miller received an indoor appointment in surgery on certification.

A. S. KIRKLAND

NOVA SCOTIA

Under the direction of Dr. Carl Stoddard, Dalhousie's Department of Anæsthesia conducted their first post-graduate course during the second week in April. Morning sessions were devoted to practical demonstrations of anæsthesia in the operating rooms of the various Halifax hospitals. Afternoons and evenings were taken up with presentations of papers and discussions dealing with many clinical, physiological, biochemical problems of anæsthesia and postoperative care. Guest teachers for the course were Dr. L. Jennings Hampton, associate professor of anæsthesiology at Yale and Dr. R. G. B. Gilbert, anæsthetist of the Montreal Neurological Institute. More than twenty-five enrolled for the course, representative of the four Maritime provinces.

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Dr. George McK. Saunders (Dal. '47) of Stellarton who recently accepted an appointment to the Sackville Medical Centre has been made a Fellow of the Royal College of Surgeons of Canada.

Dr. T. W. Gorman has been admitted to Fellowship in the Royal College of Surgeons of Canada. Dr. Gorman has been appointed to the surgical staff of St. Martha's Hospital in Antigonish.

The Halifax Children's Hospital treated 3,163 patients during 1951, the largest number in its history according to the annual report just released. An average of 88.2% of beds were occupied during the year and at times there was serious overcrowding which it is hoped will be relieved when the new wing, more than doubling the present capacity of 98 beds, will be opened.

The need for a paraplegic rehabilitation centre in the Maritime Provinces was stressed by Dr. W. D. Stevenson in addressing the initial meeting of the Board of Management, Maritime Division, Canadian Paraplegic Association. While adequate facilities are available for medical treatment there is no scheme for retraining and rehabilitating the paraplegics. "Such a centre", said Dr. Stevenson, "could also treat cerebral palsy victims, arthritics, orthopædic cases and a number of other disabled groups." The object of the Maritime Division will be to provide such a unit for the four Atlantic provinces.

Dr. Hendrik Tonning, Director of the Rheumatic Clinic at St. John, was a guest teacher at the recent postgraduate course of the Dalhousie School of Medicine.

Dr. J. Avery Vaughan has opened an office for the practice of surgery at Windsor. Dr. Vaughan recently received his certification in general surgery from the Royal College of Physicians and Surgeons.

Dr. William H. Kelly of the Memorial Guidance Clinic of Richmond, Virginia, visited the Dalhousie Medical School as a guest of the Department of Psychiatry. During his two days Dr. Kelly spoke to medical students and representatives of social agencies as well as the profession.

The American College of Surgeons in its 34th annual hospital survey approved twenty-six hospitals in the province with a total bed capacity of 4,250 and 400 bassinettes.

The hospitals of small towns and counties throughout the province, as they bring down their annual reports for 1951, continue to show deficits. It is interesting and perhaps economically instructive to compare the reports of these prosperous years with those of the poverty-ridden 'thirties when the same institutions were able to operate with small profits.

ARTHUR L. MURPHY

ONTARIO

The Lincoln County Medical Association held a banquet in honour of its senior member, Dr. John Sheahan, St. Catharines, at the Hotel Leonard on the occasion of his fifty-sixth anniversary in practice. He was presented with a portrait done by Mr. Prynse Nesbit. The portrait was unveiled by Dr. Robert T. Noble, the Registrar of the College of Physicians and Surgeons of Ontario, a classmate of Dr. Sheahan. The portrait will be placed in the new addition of the St. Catharines General Hospital.

Last year Toronto established a new record of 25 deaths per 1,000 infants of less than one year of age. Premature birth is the cause of twice as many deaths as any other single condition, and is blamed for almost one-quarter of all infant mortality. Other chief causes are: pneumonia, congenital malformation, diarrhœa and enteritis, injury at birth and congenital debility. A relatively small number of deaths is due to whooping cough, measles, tuberculosis and syphilis in that order.

The doctors in Windsor have arranged a permanent roster of physicians available for emergency service. The purpose is to make sure that no acutely ill person goes without medical attention. Under the system six doctors will be on call at all times. Of the six four have signified their willingness to serve continuously. The remaining two will be rotated from the sixty doctors who have volunteered. This means that a doctor will find it necessary to serve on the roster one day a month. Various specialist groups are expected to see that one or more members are always in the city, available for consultation and referral. The switchboard operator in charge of this service will notify the doctors three or four days in advance of the day they are required to serve.

The Pigott Construction Company, Toronto, has an order to build a $1,700,000 medical laboratory for the Defence Research Board. The building will be located at Downsview, just north of Toronto.

Professor Robert MacWhirter, head of the department of radiology at Edinburgh University and a member of the staff of the Royal Infirmary recently visited Toronto. He outlined experiences of the Edinburgh group in cancer therapy, describing their treatment methods and techniques. He also gave a lecture on cancer of the breast to hospital staff surgeons.

Last year one of every 70 persons in the area covered by the Toronto branch received service from the Victorian Order of Nurses. Four nurses have been cut off the staff because this year's objective of Community Chest was not met. Nine nursing assistants now give nursing care, under supervision of graduate nurses, where the conditions of the patient is within their scope.

The Ontario Department of Health supplies free insulin to 4,000 diabetics in the province.

The first Congress of the International Diabetes Federation will be held at Leyden, the Netherlands, in July. Dr. Gerald Wrenshall of Toronto will give a paper on Extractable Insulin of Pancreas. Dr. C. H. Best is one of the Honorary Presidents of the Federation.

Legal recognition of the activities of graduate interns in Ontario's hospitals, is provided in an amendment to the Medical Act introduced in the Legislature. Ontario is fast becoming a centre for postgraduate students from the United States and many other countries. To encourage this trend it is now proposed to permit these graduates to sign birth and death certificates in the hospitals where they are engaged in postgraduate work.

The medical staff of Women's College Hospital has furnished a four-bed ward as a tribute to Dr. Jane Manson, the first woman in Canada to specialize in ear, nose and throat. She has retired from the active staff but continues her private practice.

Executive secretary of the Ontario Medical Association for the past six years, Dr. Harry S. Dunham of Hamilton was honoured at a testimonial dinner given by the directors of the O.M.A. at the Royal York upon his retirement to private practice. His successor is Dr. Glenn I. Sawyer of St. Thomas, who is a graduate of University of Western Ontario 1936. He interned in Ottawa Civic Hospital two years, practised in Port Stanley two years and was resident surgeon at Victoria Hospital, London for a year before beginning private practice at St. Thomas.

Dr. John H. Stead was named Oakville's Man of the Year at a civic banquet. He was presented with an ebony cane. The award is made by the Lions Club to the man considered most unselfish in service to his community. A graduate of Queen's in 1909 Dr. Stead went to Cobalt as a prospector. He gave that up, however, and returned to Queen's for his medical degree. He organized the first Halton County Health Unit and in 1929 began a chest clinic in Oakville. He served as medical health officer and chief coroner for Halton County in 1949.

Dr. Kathleen Russell, founder and director of the University School of Nursing since its inception, is retiring. Under Miss Russell's direction the school has gained international recognition. Over the years nurses have come to it from all parts of the world to take postgraduate work. The school today is a cosmopolitan beehive. In its overcrowded corridors nursing problems are discussed in many languages. Oriental and Indian garb are familiar sights.

Miss Russell, a Nova Scotian, was educated at Edgehill School, King's College and Toronto General Hospital. In 1919 she graduated from the Toronto School of Social Work and in 1929 received her bachelor of pedagogy from University of Toronto. King's College honoured her with the Doctor of Civil Laws in 1939. Through her dynamic drive and clear vision, the present school of nursing came into being in 1933, assisted to a considerable degree by the Rockefeller Foundation, and with the tangible good-will of the university.

Her successor is Miss Nettie D. Fidler, past president of the Registered Nurses' Association of Ontario, and director of the Metropolitan School of Nursing, Windsor since this demonstration school was started in 1947. She is a graduate of Toronto General Hospital, where she held teaching and supervisory positions until 1928, when she obtained from McGill a certificate in teaching and administration.

She then became director of nursing at the Toronto Psychiatric Hospital and from 1932 to 1936 she was superintendent of nurses at Ontario Hospital, Whitby. From 1936 to 1947 she was lecturer and assistant professor at University School of Nursing. She has her B.A. from Toronto. She is co-author with Dr. K. G. Gray of *Law and Practice of Nursing*.

Teaching and general hospitals of Ontario will receive additional grants totalling $7,250,000 before the end of March, the close of the fiscal year. The government has promised to pay Toronto General Hospital $3,000,000 to assist in the cost of modernization and expansion. In addition the government has spent $424,000 in construction of a nurses' residence at Wellesley Hospital.

The following teaching hospitals will receive grants: St. Michael's Hospital, Toronto, $175,000; Western Hospital, Toronto, $175,000; Ottawa General Hospital, $250,000; Ottawa Civic Hospital, $150,000; Kingston General Hospital, $275,000, Kingston Hotel Dieu, $125,000; Victoria Hospital, London, $300,000; St. Joseph's Hospital, London, $100,000.

These grants are not being given on a bed basis and have nothing to do with maintenance grants.

The Joseph H. Harris Pavilion of Toronto East General Hospital was opened by the Health Minister, Mr. Paul Martin. Cost of this pavilion was $2,000,000. Mr. Harris was elected chairman of the East General Hospital Association 30 years ago, he has been chairman of the hospital board for 23 years and member of Parliament for Toronto Danforth for 30 years.

LILLIAN A. CHASE

According to information received from the Canada Permanent Trust Company, Executors of the estate of Frederick William Marlow, the Academy of Medicine, Toronto is to receive one-third of the residue of the estate which is estimated by the Executors as $100,000.

QUEBEC

The Quebec section of the Canadian Anæsthetists Society enjoyed the hospitality of the Sisters in charge of St. Joseph's Hospital, Lachine, on February 17.

The morning session consisted of a clinical demonstration by the hospital staff. The afternoon meeting was in charge of Dr. Allard, the vice-president, and several short papers were presented by members of the Society.

SASKATCHEWAN

At a recent meeting of the Legislature of the Province of Saskatchewan an amendment was made to the Health Services Act in respect to the Planning Commission. The original Planning Commission was composed of five civil servants. This has now been changed so that the Commission is composed of civil servants, representatives of the professions, hospitals and interested lay citizens. This is an important development in the relationship of Government in its approach to health problems.

At the same sitting of the Legislature the Medical Profession Act was modified to allow for reciprocal licensing directly with the Republic of Ireland. The important point about reciprocal licensing with the United Kingdom and Ireland is that it is possible only when the qualifications for registration have been obtained in the United Kingdom by examination.

Also at the recent sitting of the Legislature the Health Survey Report of the Province of Saskatchewan was tabled. This is an extensive document looking into all aspects of health affairs. It expresses common opinions following round-table debates of many points of view. It is not intended to be a plan for the future but is rather a reference book with suggestive guides.

District Medical Society meetings were held in Moose Jaw and Saskatoon where not only were some of the professional problems debated but the members took the opportunity of saying goodbye to the Registrar of the College on his departure to British Columbia.

G. GORDON FERGUSON

GENERAL

United Cerebral Palsy Held Research Symposium in Cleveland, March 28.—Nine significant phases of the treatment of Cerebral Palsy were discussed by physicians and surgeons at the Third Symposium conducted by the Research Council of United Cerebral Palsy on March 28, at the Academy of Medicine, Cleveland. The general theme of the symposium was "Appraisal of Current Methods of Treatment of Cerebral Palsy". Amongst the speakers was, Dr. J. Preston Robb, Children's Memorial Hospital, Montreal, Canada, who dealt with Neurology in Relation to Neurosurgical Approaches to Cerebral Palsy.

Housing the Aging is the topic for the University of Michigan Fifth Annual Conference on Aging to be held in Ann Arbor, Michigan, July 24 to 26, 1952.

We note that the following have recently attended postgraduate courses at the Cook County Graduate School of Medicine: R. W. Whetter, M.D., Steinbach, Man.; A. P. Warkentin, M.D., Winkler, Man.; H. J. Sullivan, Hamilton, Ont.; B. B. Sparks, M.D., Toronto, Ont.; A. J. McDougal, M.D., Indian Head, Sask.; P. D. Hooge, M.D., Kindersley, Sask.; A. A. Hooge, M.D., Biggar, Sask.

The list of scholars in Medical Science of the John and Mary Markle Foundation for 1952 includes four from Canadian medical schools. These appointments begin in 1952 and the schools that will receive the $30,000 grants for the support of the scholars are as follows:

John B. Armstrong, M.D., assistant professor of physiology, University of Manitoba Faculty of Medicine.

(M.D., University of Toronto.) Physiology: cardiopulmonary research. Grant to University of Manitoba Faculty of Medicine.

Roger Guillemin, M.D., assistant professor in experimental medicine, University of Montreal Faculty of Medicine. (B.A., B.S., University of Dijon; M.D., University of Dijon Faculty of Medicine.) Experimental medicine: physiology and endocrinology. Grant to University of Montreal Faculty of Medicine.

James Donald Hatcher, M.D., Ph.D., instructor in medicine, Boston University School of Medicine; after July 1, assistant professor of physiology, Queen's University Faculty of Medicine, Kingston, Ont. (M.D., Ph.D., University of Western Ontario.) Cardiovascular and renal physiology. Grant to Queen's University Faculty of Medicine.

Cameron Wallace, M.D., instructor in pathology, School of Medicine, Yale University and resident in pathology, New Haven Hospital; after July 1, lecturer, Department of Medical Research, University of Western Ontario Faculty of Medicine, London, Ont. (B.A., University of Western Ontario; M.D., University of Western Ontario Faculty of Medicine.) Pathology: tissue culture of tumours. Grant to University of Western Ontario Faculty of Medicine.

The purpose of the program is to help relieve the shortage of medical school teachers and investigators by providing academic security and financial assistance for young faculty members early in their careers. All grants are made direct to the medical schools at the rate of $6,000 annually for five years, and are earmarked for support of a specific Scholar and his research.

The Dominion Bureau of Statistics of Ottawa has issued a memorandum summarizing statistical information about movement of patients, institutional population and average cost per patient day for Mental Institutions operating in Canada during the years 1948, 1949 and 1950.

This report shows that admissions to mental institutions in Canada have increased in the three years under consideration. This is to be expected in view of the consistent increase in the general population. But, in addition, the admission rates per 100,000 of the estimated general population have increased. Discharges, in absolute numbers and in rates per 1,000 patients under care, have increased during the 3-year period: the 1950 total was 117.7% of the 1948 discharges. In contrast, the number of deaths in mental institutions has tended to decrease.

Costs have risen steadily. Between 1948 and 1949 the average cost per patient day rose exactly 10%: the figures are not complete for 1950, but in general show further increase, except in the case of British Columbia where there is a slight drop. British Columbia shows the highest average cost per patient day at $3.69 (1950), followed by Nova Scotia with $3.33 and Newfoundland $3.25. Quebec shows the lowest daily cost, with $1.34 (1950) and New Brunswick $1.89.

These are cold statistical features of the mental health problem in Canada. The Canadian Mental Health Association is doing its best during the "Mental Health Week" of May 4 to 10, to draw attention to the size of the problem and to urge yet greater efforts be made in dealing with it.

A David Anderson-Berry Silver-gilt medal, together with a sum of money amounting to about £100, will be awarded in 1953 by the Royal Society of Edinburgh to the person, who, in the opinion of the Council, has recently produced the best work on the therapeutical effect of x-rays on human diseases.

Applications for this prize are invited. They may be based on both published and unpublished work and should be accompanied by copies of relevant papers.

Applications must be in the hands of the General Secretary, Royal Society of Edinburgh, 22 George Street, Edinburgh, 2, by *March 31, 1953.*

Quebec Division, Canadian Cancer Society.—The Annual Meeting of the Quebec Division of the Canadian Cancer Society will be held in the Conference Room at the Laurentien Hotel, Montreal, Quebec, on Monday, May 19, 1952, at the hour of 4.30 o'clock in the afternoon for the purpose of receiving reports and the transaction of such other business as may properly be brought before the meeting.

C. T. MEDLAR,
Executive Secretary

The annual meeting of the Industrial Medical Association of the Province of Quebec will take place 7.00 p.m. Thursday May 29 in the Main Dining Room, Windsor Station, Montreal, Que.

A Canadian Commission on Nursing.—An important new health body, the Canadian Commission on Nursing, came into being on January 19, 1952, at a joint meeting of representatives of the Canadian Medical Association, the Canadian Nurses' Association, and the Canadian Hospital Council. Its formal organization followed a series of meetings that grew out of a resolution passed at the 11th Biennial Meeting of the Canadian Hospital Council in May of 1951.

At the first formal meeting of the group in November, broad terms of reference were prepared. It was proposed that the Commission investigate carefully the current nurse shortage so that it might recommend measures to ensure the provision of adequate nursing services for Canada's health needs. For its early deliberations, the Commission will be limited to six active members, the representative of the Canadian Medical Association to act as chairman. When plans have been formulated, membership will be enlarged by drawing from the national field.

A study of the contributing causes of the serious nurse shortage was instituted at the first meeting and data are being gathered. At recent meetings, methods of alleviating the shortage have been under discussion.

The course of action of the C.C.N. will be determined in part by the funds available for its program. It is now being financed by the three participating groups. The next major determinant will be the spring meetings of the three interested organizations. Direction and momentum to the project will be given by the speed and clarity with which these three groups recognize the urgency of the situation. A great deal of careful work and thought will be necessary to bring this issue into focus. From it a realistic program should be initiated to meet our nursing needs.

The authorship of the first paper in this issue, "The General Practitioner and Undergraduate Medical Teaching", should read, "G. E. Hall, M.D., and G. E. Hobbs, M.D."

The address was delivered to the Council of the Section on General Practice of The Canadian Medical Association by Dr. G. E. Hall, and prepared in collaboration with Dr. G. E. Hobbs, Chairman of the Committee on Medical Education of The Canadian Medical Association.

LIKE TO CLIMB A MOUNTAIN?

The physician members of the Alpine Club of Canada are prepared to arrange a climb for their colleagues attending the Eighty-third Annual Meeting at Banff, Lake Louise.

Interested members should bring with them suitable personal apparel in the form of boots, blue jeans, raincoat, etc. The necessary additional equipment for climbing will be supplied locally if adequate notice is given.

If you desire to take advantage of this unique opportunity to see the country from a new viewpoint, please communicate at once with Dr. R. C. Riley, Holy Cross Hospital, Calgary, Alberta.

NEWS OF THE MEDICAL SERVICES

Canadian Armed Forces

Surgeon Lieutenant Commander John S. Simpson, R.C.N.(R.) Retired, has been commissioned in the Regular Force of the R.C.N. and appointed to R.C.N. Hospital, Esquimalt, B.C. Dr. Simpson, a native of Collingwood, Ontario and a graduate of the University of Toronto 1943 served with the Navy during World War II. Since demobilization he has been carrying on postgraduate study in surgery.

Majors W. R. Dalziel, H. W. Greenidge and Captains J. A. Beswick and T. M. Marshall have returned to Canada after serving a tour of duty in Japan and Korea,

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(Continued from page 489)

intravenous set, contrary to a hospital regulation, in such a manner that the blood was permitted to flow by way of a Y-tube into the aqueous solution of glucose. The symptoms which followed the entry of this mixture into the vein included a chill, nausea and collapse associated with hypotension, rapid weak heart action and an elevation of the temperature to 101.2° F. After the discontinuance of this intravenous mixture, an infusion of normal saline solution was started. To this blood was added and the transfusion then was completed without further mishap.

The effect of mixing citrated whole blood and aqueous glucose solution may be demonstrated quite readily by combining these two liquids in a test-tube, a beaker or the tubing of a transfusion set and observing the granular brick dust-like particles that separate when the proportion of blood in the mixture is in excess of one part in 10 (see Fig. 1A). It is immaterial whether the blood is added to the glucose solution or *vice versa;* or whether 5 or 10% glucose solution is employed. All blood types behave alike in this regard and the resulting clumps of red cells are capable of passing through the filter of a transfusion apparatus.

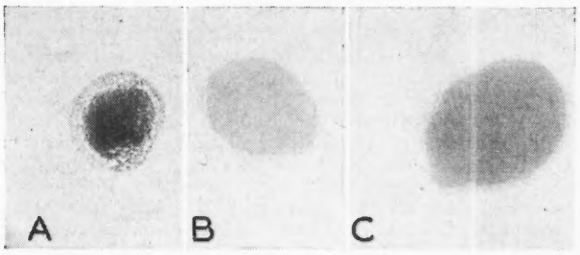

Fig. 1.—The effluents from the needles of transfusion sets, the tubing of which contained mixtures of citrated whole blood and A, 5% glucose in water; B, 5% glucose in saline and C, normal saline.

The reason for the pronounced clumping of the erythrocytes in isotonic *aqueous* solution of glucose can not be readily explained. The cohesion of the cells in this particular circumstance is not related to any specific agglutinins or to the presence of the glucose *per se.* Unlike the true agglutination of red blood cells, the process is reversible and is unaccompanied by hæmolysis.

The clumping of the cells does not occur when citrated blood is mixed with solutions of glucose in saline (see Fig. 1B). The addition of a few crystals of sodium chloride or some isotonic saline solution to a heavily agglutinated mixture of aqueous glucose and blood allows the immediate dispersion of the erythrocytes with the formation of a uniform suspension of these cells (see Fig. 2B).

Thus, the non-specific, extravascular agglutination appears to be related in some manner to the absence of electrolytes from the medium. That it is solely a property of the erythrocytes is shown by the fact that the clumping occurs with cells that have been washed free from contact with the plasma. The addition of plasma to a preparation containing clumped erythrocytes occasions the dispersal of these cells but less promptly and less completely than does a similar volume of isotonic sodium chloride solution.

While the phenomenon in question may not be of great importance insofar as danger to life is concerned, it doubtless is a generally unsuspected cause of some of the untoward reactions associated with the transfusion of blood. With the prevalent liberal use of whole blood and suspensions of red blood cells, due consideration should be given to all the factors conducive of an unfavourable response on the part of the recipient.

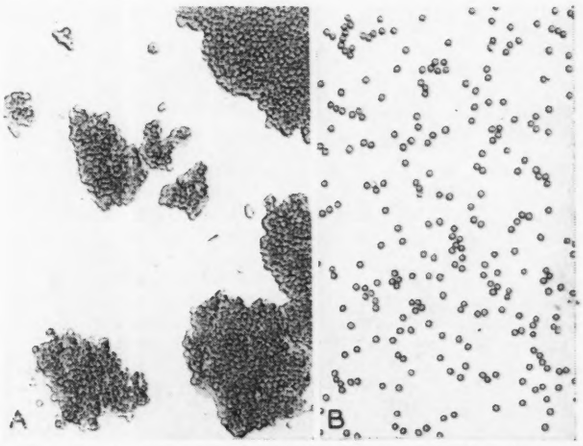

Fig. 2.—A. The microscopic appearance of the clumped erythrocytes obtained from a mixture of citrated whole blood and 5% aqueous glucose solution. B. The same preparation after the addition of normal saline.

Summary

Agglutination of the erythrocytes occurs when citrated blood is mixed with aqueous solutions of glucose. This phenomenon may be a cause of transfusion reactions. Therefore, glucose in water should not be used as a medium for the administration of whole blood, packed or re-suspended red blood cells, or be introduced into the tubing containing blood immediately following such a transfusion.

Reference

1. Wilson, H.: Aqueous dextrose solutions: a hazard in transfusions, *Am. J. Clin. Path.*, **20**: 667, 1950.

and Majors F. C. R. Chalke, D. H. M. Hall and Captains D. E. Guthrie and N. H. Gelpke have been posted to the Far East as replacement medical officers.

The following physicians were recently appointed to commissions in the Canadian Army Active Force: Major J. M. M. Drew, Australia; Major W. J. E. Phillips, Australia; Captain W. S. Hacon, U.K.; Captain S. M. Mazewski, U.K.; Captain M. P. D. Waldren, U.K.

Captain J. A. W. Raymond, Montreal, has been promoted to the rank of Major and posted to Whitehorse Military Hospital as Officer-in-Charge of Surgery.

Captain J. E. Gilbert has been promoted to the rank of Major and appointed Officer-in-Charge Air Borne Detachment 37 Canadian Field Ambulance, Camp Borden.

Major A. C. Derby, Kingston Military Hospital, who wrote the recent examinations held by the Royal College of Physicians of Canada, has received his certificate as Specialist in General Surgery.

Major A. S. Cowie, formerly Area Medical Officer, New Brunswick Area, has been appointed Deputy Command Medical Officer, Central Command. Major V. H. Radoux has replaced Major Cowie as Area Medical Officer, New Brunswick Area.

Colonel G. L. Morgan Smith, O.B.E., C.D., R.C.A.M.C., who has completed the course at the Australian Staff College has been posted to Korea as A.D.M.S. Commonwealth Division.

Colonel K. A. Hunter, O.B.E., C.D., R.C.A.M.C., Deputy Director General of Medical Services (Army), Colonel J. N. B. Crawford, M.B.E., E.D., R.C.A.M.C., Senior Consultant to the Director General of Medical Services (Army), Lieut.-Col. J. E. Andrew, E.D., R.C.A.M.C., Officer-in-Charge Surgery, Toronto Military Hospital and Major A. C. Derby, Officer-in-Charge Surgery, Kingston Military Hospital, attended a "Symposium on the Treatment of Trauma in the Armed Forces" at the U.S. Army Medical Services Post-Graduate School, Washington, D.C. March 10 to 12, 1952. Colonels Hunter, Crawford and Andrew took part in the discussion.

The D.G.M.S. Exercise "Broadfront" was held at The R.C.A.M.C. School, Camp Borden, from March 19 to 21, 1952, under the Chairmanship of Brigadier W. L. Coke, O.B.E., C.D., R.C.A.M.C., Director General of Medical Services (Army). The Command and Area Medical Officers of the Army and representatives from the U.S. Armed Forces, British Armed Forces, R.C.N., R.C.A.F., arms and services of the Canadian Army, and certain members of the D.G.M.S. Consultant Staff were in attendance.

Air Commodore A. A. G. Corbet, Director of Medical Services, R.C.A.F., and Group Captain B. C. Coles, Commanding Officer, R.C.A.F. Institute of Aviation Medicine, with ten other R.C.A.F. medical officers, attended the 23rd Annual Meeting of the Aero Medical Association in Washington, D.C., March 17 to 19, 1952.

Scientific papers were given by officers of the R.C.A.F. and Defence Research Board as follows:

(a) "Improved Earpieces for the Oximeter", R. H. Talpin and H. G. Saville, Department of Pharmacology, University of Toronto and Defence Research Medical Laboratories, Biophysics Section, Toronto.

(b) "Peripheral Blood Flow at Altitude", F. Girling and C. Maheux, Defence Research Medical Laboratories, Biophysics Section, Toronto.

(c) "The Statistical Study of the Relationship Between the Ear and the Response of the Ear to Pure Tones and the Whispered Voice", Joseph A. Sullivan, M.B., Consultant in Otolaryngology to the R.C.A.F.

(d) "Fatigue", Gilbert L. Adamson, M.D., Consultant in Neuropsychiatry to the R.C.A.F.

(e) "Spectrophotometric Studies of Thin Films of Whole Blood", Flight Lieutenant N. C. Law, Defence Research Medical Laboratories, Biophysics Section, Toronto, Ontario.

(f) "A New Method for The Prevention of Air Sickness", W. H. Johnson, Ph.D.

The R.C.A.F. displayed a scientific exhibit in the Hotel Statler during the period of the meeting.

BOOK REVIEWS

TUMOURS OF THE SKIN

J. J. Eller, Director of the Department of Dermatology, New York City Hospital, N.Y.; Consulting Dermatologist to: French Hospital, New York; Morristown Memorial Hospital, Morristown; and W. D. Eller, Assistant in Dermatology and Syphilology, University Hospital, New York-Bellevue Medical Centre; Associate Attending Dermatologist, New York City Hospital. 697 pp., 2nd ed. $18.00. Lea & Febiger, Philadelphia; The Macmillan Company of Canada Limited, Toronto, 1951.

Superficially this second edition bears little resemblance to the first. It has been so extensively revised and greatly enlarged that it might almost be considered as a new book. Over one-third of the book has been devoted to a full discussion of non-malignant tumours, exclusive of those which are considered as pre-cancerous conditions. The distinction between senile and seborrhœic keratoses is clearly made, and by the use of these names much confusion commonly introduced by a varied and often contradictory nomenclature is avoided. The authors name a number of authorities who agree with them in considering seborrhœic keratoses as occasional precursors of malignant change as well as others who do not agree with them. The discussion of malignant melanoma is particularly commendable.

In considering treatment of malignant growths a number of diagrammatic examples are given of methods of radiotherapy preferable in special locations. These appeared in the first edition and could have been omitted without loss, as trained and experienced radiotherapists such as could undertake such cases are familiar with the technical problems involved and the procedures required. The bulk of the book has been somewhat increased also by the inclusion of two chapters on Cutaneous Surgery and Plastic Repair of Skin Tumours, and Radiation Physics respectively. These seem unnecessary as one cannot learn the rudiments of surgical techniques from a book and the chapter on Radiation Physics is unlikely to be referred to either by the general practitioner or the competent radiotherapist.

The subject matter is well presented, the illustrations are very numerous and good, accomplishing their purpose in most instances as well as can be desired. The book is one which should be in the hands of all dermatologists and in the libraries of institutions dealing with cancer, while it will be of great help and value to general practitioners, who are so often the first to encounter the conditions described.

METABOLIC METHODS

Clinical Procedures in the Study of Metabolic Functions. C. F. Consolazio, Chief of Biochemistry, United States Army, Medical Nutrition Laboratory, Chicago; Robert E. Kohnson, Professor and Head of the Department of Physiology, University of Illinois; E. Marek, Biochemist, United States Army. 471 pp., illust. $7.75. The C. V. Mosby Company, St. Louis, Mo.; McAinsh & Co. Limited, Toronto, 1951.

This is a manual detailing selected methods that are useful in studies of metabolic functions. A standard form of presentation is followed throughout and in most cases

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only one method of analysis for each substance is given. The authors have taken commendable care in selecting methods that are most adaptable for use in the clinical and research laboratories as well as in the field. The excellent organization permits the methods to be followed easily.

The scope of the book is extensive. The text is subdivided into sections dealing with the collection and storage of specimens; instrumentation; biochemical procedures for minerals, protein and nitrogen compounds, CHO and derivatives, fats, vitamins, hormones, enzymes, pigments and hydrogen ion concentration; microbiological procedures; and physiological measurements of blood gases, respiratory gases, respiratory metabolism, pulmonary measurements, plasma, blood and extracellular volumes. The last three sections deal with methods useful in the field, in metabolic wards and in clinical laboratories. There are extensive references and also a series of useful tables. Although some methods in common use are omitted, this is an extremely useful reference book for clinical, biochemical and physiological laboratories.

TREATMENT OF ASTHMA

Edited by Harold A. Abramson, Associate Physician and Chief, Allergy Clinic, The Mount Sinai Hospital, New York. 751 pp., illust. $12.25. The Williams & Wilkins Company, Baltimore; Burns & MacEachern, Toronto, 1951.

As stated in the preface, "The purpose of this volume is to co-ordinate present knowledge of the allergic nature of asthma with certain methods of therapy connected with the psychogenic aspects of asthma". With thirty-five chapters, and an impressive list of contributors, many of whom are pure investigators, this volume, apart from the size and obvious redundancy is a noteworthy addition to the ever-growing number of treatises on allergy. The book is divided into six parts which are: Basic Concepts, General Testing and Treatment, Nature of Inhalant Allergens and their Therapy, Somatic Therapy, Psychotherapy and Special Geography.

The chapters on the Physiology of Respiration, by Hoff and Breckenridge, Lung Volume and Air Flow by Whittenberger, and the Influence of Experimental Neuroses on the Respiratory Function by Liddell, are welcome factual additions to the usual texts. The chapter by Rogers on the "Office Treatment of Bronchial Asthma" is delightfully written and full of common sense, with the addition of brevity—a virtue which seems to be lacking in many of the other clinical chapters. The book contains much of a controversial nature, and the editor has wisely or unwisely allowed each contributor a free rein.

There are interesting chapters on the chemical nature of inhalant allergens, which go into considerable detail. This book is recommended primarily for its attempt to correlate those many factors pertaining to asthma which have been only touched upon or omitted in most standard texts.

THE ARCHITECTURE OF NORMAL AND MALFORMED HEARTS

A. Spitzer, Late Professor of Anatomy, The University of Vienna, with Summary by Maurice Lev, Associate Professor of Pathology, University of Illinois College of Medicine, Associate Pathologist, University of Illinois Hospitals, Chicago. 145 pp., illust. $6.00. Charles C. Thomas, Springfield; The Ryerson Press, Toronto, 1951.

Spitzer's theory of the development of the mammalian heart was based on his study of cardiac organs up the animal scale, and the correlation of these findings with the embryological development of the heart of man. Later his observations on congenital heart malformations convinced him that his theory also could be applied to them. His monograph on the subject has been translated recently into English. The book explains in detail his conception of the process of torsion of the arterial loop in fetal life that results in the establishment of two circulations through the heart while yet arranging them in series. He takes the known anatomic facts and presents them in such a way that they fit into his theory well. He explains the varying degrees of dextraposition or transposition of the great vessels in congenital heart malformations, of the varying degrees of lack of torsion of the great vessels in the early stages of development.

In his monograph the terms used are more commonly accepted in the Anatomy and Pathology departments, and are thus slightly different from those in general use amongst clinicians interested in congenital heart disease. It is most useful to have this valuable book translated into English and to permit all those concerned with the basic facts in the development of the normal and pathological heart, to have it readily at their disposal.

ROENTGEN MANIFESTATIONS OF PANCREATIC DISEASE

M. H. Poppel, Associate Professor of Clinical Radiology, New York University-Bellevue Medical Centre, Associate Roentgenologist, New York University Hospital, New York City. 389 pp., illust. $12.50. Charles C. Thomas, Springfield, Illinois; The Ryerson Press, Toronto, 1951.

The problem of the diagnosis of pancreatic disease is briefly put by Dozzi and Bockus: "The pancreas is usually inaccessible to palpation and rarely yields direct signs of abnormality by x-ray. It is obvious, therefore, that any laboratory aid which can be brought to bear on the problem of diagnosis of pancreatic disease cannot be neglected." Dr. Poppel states and makes the case for roentgen examination of the pancreas and of the adjacent organs and tissues and does it admirably. So frequently, even in advanced lesions of the pancreas, the signs and symptoms are those of disease of the biliary or gastro-intestinal tracts that the roentgen method of examination may not be used to its full extent. The extent to which it can be used is well brought out by the text and the excellent reproductions of x-ray films. In an orderly and detailed fashion the anatomy of the pancreas and adjacent organs is discussed, followed by chapters on methods of roentgen examination, tumours and infections of the pancreas, pancreatic insufficiency and lesions of the pancreas secondary to disease elsewhere—all concluded by an excellent chapter on differential diagnosis using roentgen methods.

This is a book essentially for the roentgen diagnostician, but one that the surgeon and internist should know for it describes methods that tend to confirm or disprove a tentative diagnosis of pancreatic disease. The publisher and printer have combined to make the book both artistic and practical.

TREATISE ON SURGICAL INFECTIONS

F. L. Meleney, Associate Professor of Clinical Surgery, College of Physicians and Surgeons, Columbia University; Associate Visiting Surgeon, Presbyterian Hospital, New York. 713 pp., illust. $15.00. Oxford University Press, New York, Toronto, 1948.

This extensive monograph is the result of a lifetime of observation and experimentation by an authority in the field of surgical bacteriology. As mentioned in the preface, the book is designed to bring the bacteriological laboratory close to the clinician. This object is particularly praiseworthy considering the lack of familiarity of most surgeons with the science of bacteriology. The twenty-two chapters include an excellent one covering the historical development of bacteriology and others of particular interest to surgeons on sterile operating room technique and wound infection in clean operations.

BOC CANADA

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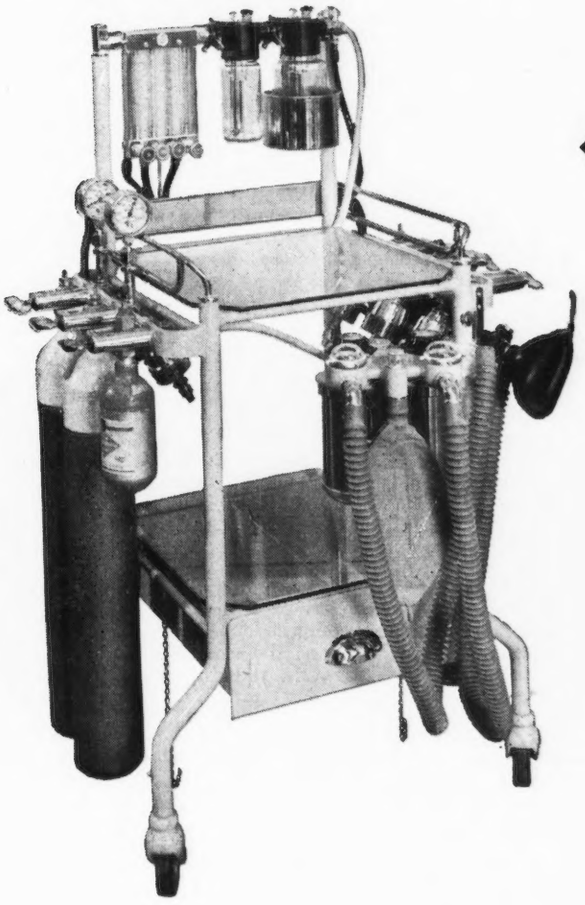

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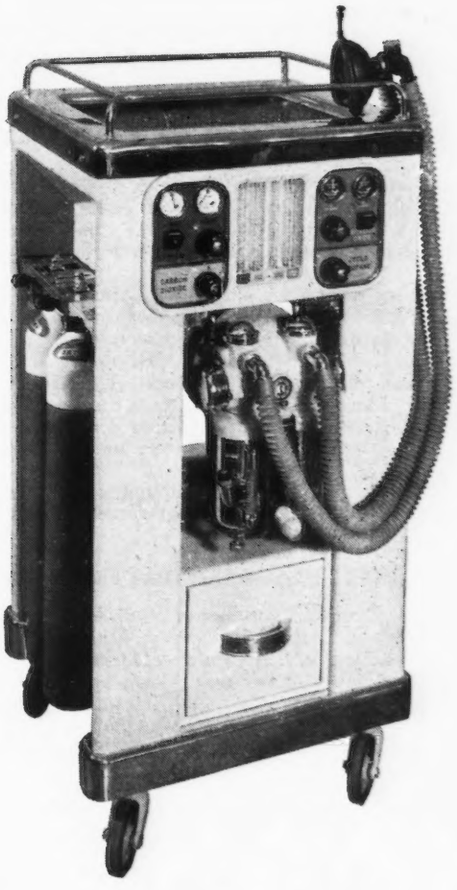

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Canad. M. A. J.
May 1952, vol. 66

The types, mode of entrance and spread of the usual bacterial invaders are well described and the subject of immunity is presented in a very readable manner. The factual material is illustrated by case records from the author's experience and each chapter is terminated by an extensive bibliography. The surgeon will find much to interest him in this book besides the opportunity to refresh his knowledge of bacteriology. The bacteriologist will welcome this work as an excellent and well presented source of information. As the book was presented in 1948, the antibiotics since streptomycin are not mentioned, a point which is unfortunate in the presentation of a new book in this rapidly changing antibiotic era.

CANCER CYTOLOGY OF THE UTERUS

J. E. Ayre, Director, Dade County Cancer Institute, Cancer Cytology Centre; and Chief, Cancer Research Department, Medical Research Foundation of Dade County, Miami, Florida. 407 pp. illust. $17.50. Grune & Stratton Inc., New York; The Ryerson Press, Toronto, 1951.

The author's primary object is to provide "composite evidence of the character of cervical cancer, particularly in its early stages by illustrating clinical findings, cytologic manifestations and decisive histologic studies on individual cases". The natural history of cervical cancer was studied by repeated surface scrapings of the cervix (using a wooden spatula), which the author calls "surface cell biopsy". A progression or regression of cellular events was observed over months or years. "Cellular types were graded in accordance with histological findings revealed by serial sections."

Ayre claims that a "Surface cell biopsy" is a procedure halfway between a biopsy and a vaginal smear. He also stresses that cytology is not offered as a substitute for histologic section obtained by a surgical biopsy but as a complement to surgical biopsy in the pre-visual and clinically benign lesions. Grades of cell pathology and cell types which originate from three zones comprising the squamous cervical epithelium are profusely illustrated.

The author recognizes early anaplastic cells which he calls the "precancer cell complex" or "nearo-carcinoma, the earliest form of cancer". One wonders if the terms cancroid or canceroid meaning resembling cancer, or carcinoid meaning a very low grade of carcinoma were considered. The criteria for diagnosis are described and extensively illustrated. This portion of the work is highly provocative and requires confirmation from other observers.

This book merits attention as a noteworthy and provocative contribution in the field of gynæcytology.

EPILEPTIC SEIZURE PATTERNS

W. Penfield, Professor of Neurology and Neurosurgery, McGill University, Director, Montreal Neurological Institute, Montreal; and K. Kristiansen, Assistant Surgeon, in Charge Neurosurgery, Oslo City Hospital, Oslo, Norway. 104 pp. illust. $3.50. Charles C. Thomas, Springfield, Illinois; The Ryerson Press, Toronto, 1951.

Every practitioner is likely to see an epileptic seizure at some stage of his practice, since one person in every two hundred of the population is affected by this disease. What he observes during the seizure may be crucial for the patient's future. He can, along with many relatives, be merely upset, dismayed and disorganized by the experience, and have no objective data to set down following the seizure. On the other hand, and especially with the aid of this little volume, he can become at once a good clinical observer with obvious benefits accruing to his particular patient, and also an ally of the clinical researchers who are intent upon learning everything possible for scientific medicine from every seizure witnessed.

The data considered by the authors were derived from an intensive study of 259 cases admitted to the Montreal Neurological Institute. The high degree of verification of the type of lesion producing the epilepic seizures speaks well for the correlation of clinical and pathological findings in that Institute.

The evidence is allowed to speak for itself throughout, sometimes in the words of the patients, sometimes in the simple and clear reports of the authors. The eighteen figures are merely blank brain maps (such as one uses in the neurosurgical operating room) upon which the locations of the lesions are sketched, bearing on a particular type of warning or seizure. It is remarkable what a close grouping of the foci of a dozen patients with a sensory visual aura occurs in the occipital lobe, and what a concentration of foci in the posterior superior temporal lobe one finds on examining the cortical maps presented on patients complaining of "dizziness" as their first symptom in an attack.

To the medical undergraduate, fresh from his studies in morphology; to the general practitioner who has to patch together, so often, disjointed and fragmentary data from the relatives of an epileptic; and to the neurological specialist, this volume will prove a veritable touchstone.

PLASTIC SURGERY OF THE NOSE

J. B. Brown, Professor of Clinical Surgery, Washington University School of Medicine, St. Louis, Mo.; and F. McDowell, Assistant Professor of Clinical Surgery, Washington University School of Medicine, St. Louis, Mo. 427 pp. illust. $17.00. C. V. Mosby Company, St. Louis, Mo.; McAinsh & Co. Limited, Toronto, 1951.

The senior author who is internationally known for his work in plastic surgery has presented the results of 25 years of research and clinical experience in nasal plastic surgery. To this is added the experience of both authors during World War II in reconstruction of extensive traumatic injuries of the nose caused by war injuries.

This book is considerably more detailed than many of the recent texts dealing with plastic surgery of the nose. In addition to the usual description of osteoplastic rhinoplasty; the use of grafts of bone, cartilage, skin and composite pedicle grafts from the ear are discussed. The treatment of various types of fracture of the nose both early and late is adequately dealt with. Section 4 deals with the secondary repair of defects of noses associated with single and double cleft lip. The difficulty of overcoming these defects is indicated by the various surgical procedures required. It should be emphasized that if these procedures are attempted at too early an age, subsequent unequal growth of the nose may cause distortion which will require further operations as the child attains adult growth. The remaining chapters describe the treatment of radiation lesions of the nose, tumours of the nose and miscellaneous conditions such as scars, tattoos, rhinophyma, atresia and rare congenital anomalies. The book is profusely illustrated with excellent two-colour drawings showing a sequence of operative stages of osteoplastic rhinoplasty. The operations described are the methods found to be most satisfactory in the experience of the authors, and no attempt has been made to present other procedures. The results of operations, shown by large, clear pre- and postoperative photographs reveal the authors' mastery of this phase of plastic surgery which they have described. Their wide and varied experience with a large number of cases enables them to speak authoritatively and definitely on subjects that have caused wide difference of opinion in the past. The style is concise, and plastic surgeons as well as others interested in this type of surgery will find this volume most stimulating and helpful.

Books Received

Books are acknowledged as received, but in some cases reviews will also be made in later issues.

Tumors of the Breast. F. W. Stewart, Pathologist to Memorial Hospital, Professor of Pathology, Cornell University Medical School, Attending Pathologist of New York Hospital, N.Y. 114 pp., illust. $1.10. Armed Forces Institute of Pathology, Washington, D.C., 1951.

Deficiency Diseases in Japanese Prison Camps. D. A. Smith and M. F. A. Woodruff. 209 pp. 6s. 6d. H. M. Stationery Office, Publications Division, London, 1951.

Autopsy Diagnosis and Technic. O. Saphir, Pathologist, Michael Reese Hospital; Clinical Professor of Pathology, University of Illinois Medical School, Chicago. 471 pp., illust., 3rd ed. $6.00. Paul B. Hoeber, Inc., New York, N.Y., 1951.

Frontal Lobotomy and Affective Behaviour. J. F. Fulton, Sterling Professor of Physiology, Yale University. 160 pp., illust. $3.00. W. W. Norton & Co. Inc., New York, 1951.

Approved Laboratory Technic. J. A. Kolmer, Professor of Medicine and Director of the Institute of Public Health and Preventive Medicine, Temple University; E. H Spaulding, Professor of Bacteriology, Temple University School of Medicine; and H. W. Robinson, Professor of Physiological Chemistry, Temple University School of Medicine. 1180 pp., illust., 5th ed. $12.00. Appleton-Century-Crofts, Inc., New York, 1951.

Treatise on Surgical Infections. F. L. Meleney, Associate Professor of Clinical Surgery, College of Physicians and Surgeons, Columbia University; Associate Visiting Surgeon, Presbyterian Hospital, New York. 713 pp., illust. $15.00. Oxford University Press, New York, Toronto, 1948.

The Specialties in General Practice. R. L. Cecil, Professor of Clinical Medicine, Emeritus, Cornell University Medical College, New York, 818 pp., illust. $16.00. W. B. Saunders Company, Philadelphia; McAinsh & Co. Ltd., Toronto, 1951.

History of Medicine in Ireland. J. Fleetwood. 420 pp., illust. 21/-. Browne & Nolan Ltd.; The Richview Press, Dublin, 1951.

Pharmacopœa Internationalis. 406 pp., illust. 35/-. World Health Organization, Palais des Nations, Geneva, 1951.

Menstrual Disorders and Sterility. C. Mazer, formerly Associate Professor of Gynæcology and Obstetrics, Graduate School of Medicine, University of Pennsylvania, 583 pp., illust, 3rd ed., revised. $10.00. Paul B. Hoeber Inc., New York, 1951.

Marriage. K. Walker. 136 pp. $2.25. British Social Biology Council; S. J. Reginald Saunders & Co. Ltd., Toronto, 1951.

How to Improve Your Sexual Relations. E. W. Hirsch, Member of the American Urological Association, Chicago Urological Society, American Medical Association. 64 pp., illust. $1.00. Zeco Publishing Co., Chicago, 1951.

The Glands Inside Us, Their Effect on Our Lives. J. Ebling, Lecturer in Zoology at the University of Sheffield, England. 94 pp., illust. $0.25. S. J. Reginald Saunders & Co. Ltd., Toronto, 1951.

Year Book of Obstetrics and Gynæcology. J. P. Greenhill, Professor of Gynæcology, Cook County Graduate School of Medicine; Attending Gynæcologist, Cook County Hospital. 567 pp., illust. $5.00. The Year Book Publishers, Inc., Chicago, 1951.

The 1951 Year Book of General Surgery. E. A. Graham, Professor of Surgery, Washington University School of Medicine; Surgeon-in-Chief of the Barnes Hospital and of the Children's Hospital, St. Louis. 621 pp., illust. $5.00. The Year Book Publishers, Inc., Chicago, 1951.

Modern Medication of the Ear, Nose and Throat. N. D. Fabricant, Clinical Assistant Professor of Otolaryngology, University of Illinois, College of Medicine, Chicago. 245 pp., illust. $7.00. Grune & Stratton, New York; The Ryerson Press, Toronto, 1951.

The United States Public Health Service — 1798-1950. R. C. Williams, Assistant Surgeon General, United States Public Health Service, Washington, D.C. 890 pp., illust. $7.50. Commissioned Officers Association of the United States Public Health Service, Inc., Bethesda, Maryland, 1951.

Any Questions? A Selection of Questions and Answers published in the British Medical Journal. 240 pp. 7/6. First Series. British Medical Association, London, 1951.

Untoward Reactions of Cortisone and ACTH. V. J. Derbes, Associate Professor of Medicine, Tulane University of Louisiana School of Medicine and T. E. Weiss, Instructor in Medicine, Tulane University of Louisiana School of Medicine. 77 pp. $2.75. Charles C. Thomas, Springfield, Illinois; The Ryerson Press, Toronto, 1951.

Visceral Innervation and its Relation to Personality. A. Kuntz, Professor of Anatomy, St. Louis University School of Medicine, St. Louis, Missouri. 152 pp., illust. $5.50. Charles C. Thomas, Springfield, Illinois; The Ryerson Press, Toronto, 1951.

Thyroid Function and its Possible Rôle in Vascular Degeneration. W. B. Kountz, Assistant Professor of Clinical Medicine, Washington University School of Medicine. 62 pp., illust. $2.50. Charles C. Thomas, Springfield, Illinois; The Ryerson Press, Toronto, 1951.

Cardiac Pain. S. H. Rinzler, Adjunct in Medicine and Cardiovascular Research Unit, Beth Israel Hospital. 139 pp., illust. $4.50. Charles C. Thomas, Springfield, Illinois; The Ryerson Press, Toronto, 1951.

Surgery of Peripheral Nerves. E. Seletz, Assistant Clinical Professor of Neurological Surgery, University of Southern California School of Medicine. 185 pp., illust. $13.00. Charles C. Thomas, Springfield, Illinois; The Ryerson Press, Toronto, 1951.

Observations on the General Effects of Injury in Man. R. T. Grant and E. B. Reeve, from the Clinical Research Unit of the Medical Research Council, Guy's Hospital. 313 pp. 8/6. His Majesty's Stationery Office, London, 1951.

Cardiolipin Antigens. World Health Organization: Monograph Series No. 6. M. C. Pangborn and F. Maltaner, Division of Laboratories and Research, New York State Department of Health, Albany, N.Y. 63 pp. $1.00. World Health Organization, Palais des Nations, Geneva, 1951.

The Cost of Sickness and the Price of Health: Monograph Series, No. 7. C.-E. A. Winslow, Consultant in Public Health Administration, World Health Organization. 106 pp. 7/6. $1.50. Available also in a French edition. World Health Organization, Palais des Nations, Geneva, 1951.

Textbook of Obstetrics. J. F. Cunningham, Professor of Obstetrics and Gynæcology, University College (N.U.I.), Dublin. 499 pp., illust. $8.00. William Heinemann-Medical Books Ltd., London; British Book Service (Canada) Ltd., Toronto, 1951.

A Textbook of Venereal Diseases. R. R. Willcox, Consultant in Venereal Diseases, St. Mary's Hospital, London. 439 pp., illust. $6.50. William Heinemann-Medical Books Ltd., London; British Book Service (Canada) Ltd., Toronto, 1951.

Clinical Hat Pegs for Students and Graduates. R. J. Willan, Professor Emeritus in Surgery, Durham University; Consulting Surgeon, Royal Victoria Infirmary, Newcastle-upon-Tyne. 116 pp., illust. $3.00. William Heinemann-Medical Books Ltd., London; British Book Service (Canada) Ltd., Toronto, 1951.

The Way to Easy Childbirth. D. Buckley. 64 pp. $1.00. William Heinemann-Medical Books Ltd., London; British Book Service (Canada) Ltd., Toronto, 1951.

A Complete Outline of Fractures. J. G. Bonin, Late First Assistant to the Injury Clinic, West London Hospital; Acting Registrar, Royal National Orthopædic Hospital. 671 pp., illust., 3rd ed., Revised and Enlarged. $8.50. William Heinemann-Medical Books Ltd., London; British Book Service (Canada) Ltd., Toronto, 1951.

Practical Biology. C. J. Wallis, Principal, Eaton and Wallis, Tutors. Formerly Master-in-Charge of Biology, University College School and Biology Master, Highgate School. 404 pp., illust., 3rd ed. $4.25. William Heinemann-Medical Books Ltd., London; British Books Service (Canada) Ltd., Toronto, 1951.

Joll's Diseases of the Thyroid Gland. F. F. Rundle, The Unit of Clinical Investigation, The Royal North Shore Hospital of Sydney, Australia; Visiting Surgeon, Prince Henry Hospital, Sydney. 520 pp., illust., 2nd ed. $17.25. William Heinemann-Medical Books Ltd., London; British Book Service (Canada) Ltd., Toronto, 1951.

A Practical Handbook of Psychiatry for Students and Nurses. L. Minski, Lecturer in Psychiatry, University of London, Physician Superintendent, Belmont Hospital, Sutton. 136 pp., 2nd ed. $1.25. William Heinemann-Medical Books Ltd., London; British Book Service (Canada) Ltd., Toronto, 1951.

Diseases of the Nervous System. W. R. Brain, Physician to the London Hospital and to the Maida Vale Hospital for Nervous Diseases. 1002 pp., illust., 4th ed. $7.50. Oxford University Press, Toronto, 1951.

Hay-Fever: A Key to the Allergic Disorders. J. Freeman. 321 pp., illust. $8.50. William Heinemann-Medical Books Ltd., London; British Book Service (Canada) Ltd., Toronto, 1950.

Pathology of the Fetus and the Newborn. E. L. Potter, Associate Professor of Pathology, Department of Obstetrics and Gynæcology, The University of Chicago. 574 pp., illust. $19.00. Year Book Publishers, Inc., Chicago, Ill., 1952.

Clinical Pathology of the Eye. B. Samuels, Emeritus Clinical Professor of Ophthalmology, Cornell University Medical College and A. Fuchs, E. O. Professor of Ophthalmology, University of Vienna. 420 pp., illust. $20.00. Paul B. Hoeber Inc., New York, 1952.

The 1951 Year Book of Drug Therapy. H. Beckman, Director, Departments of Pharmacology, Marquette University Schools of Medicine and Dentistry. 502 pp., illust., $5.00. Year Book Publishers, Inc., Chicago, 1951.

Physics in Medical Radiology. S. Russ, Professor Emeritus, Middlesex Hospital. L. H. Clark, Physicist, Hammersmith and Lambeth Hospitals and S. R. Pelc, Physicist, Medical Research Council Radiotherapeutic Research Unit. 296 pp., illust., 2nd ed. Revised. $5.00. Chapman & Hall Ltd., London; British Book Service (Canada) Ltd., 1950.

Asthma. C. Francis, Surgeon and i/c Allergy Clinic, Metropolitan Ear, Nose and Throat Hospital. 49 pp., illust. $1.00. William Heinemann, Medical Books Ltd., London; British Book Service (Canada) Ltd., Toronto, 1950.

Patterns of Marriage. E. Slater, Physician in Psychological Medicine, National Hospital, and M. Woodside, Commonwealth Fellow, London School of Economics, 1942-1943. 311 pp. $3.75. Cassell & Co. Ltd., London; British Book Service (Canada) Ltd., Toronto, 1951.